# SILVERTON
# REV 1.0
# FAB M
# RETAIL

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| [64] | I2C |
| [65] | BLANK |
| [66] | BLANK |
| [67] | BLANK |
| [68] | BLANK |
| [69] | BLANK |
| [70] | BLANK |
| [71] | BLANK |
| [72] | BLANK |
| [73] | BLANK |
| [74] | BLANK |
| [75] | BLANK |
| [76] | BLANK |
| [77] | VBAT |
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| [79] | BLANK |
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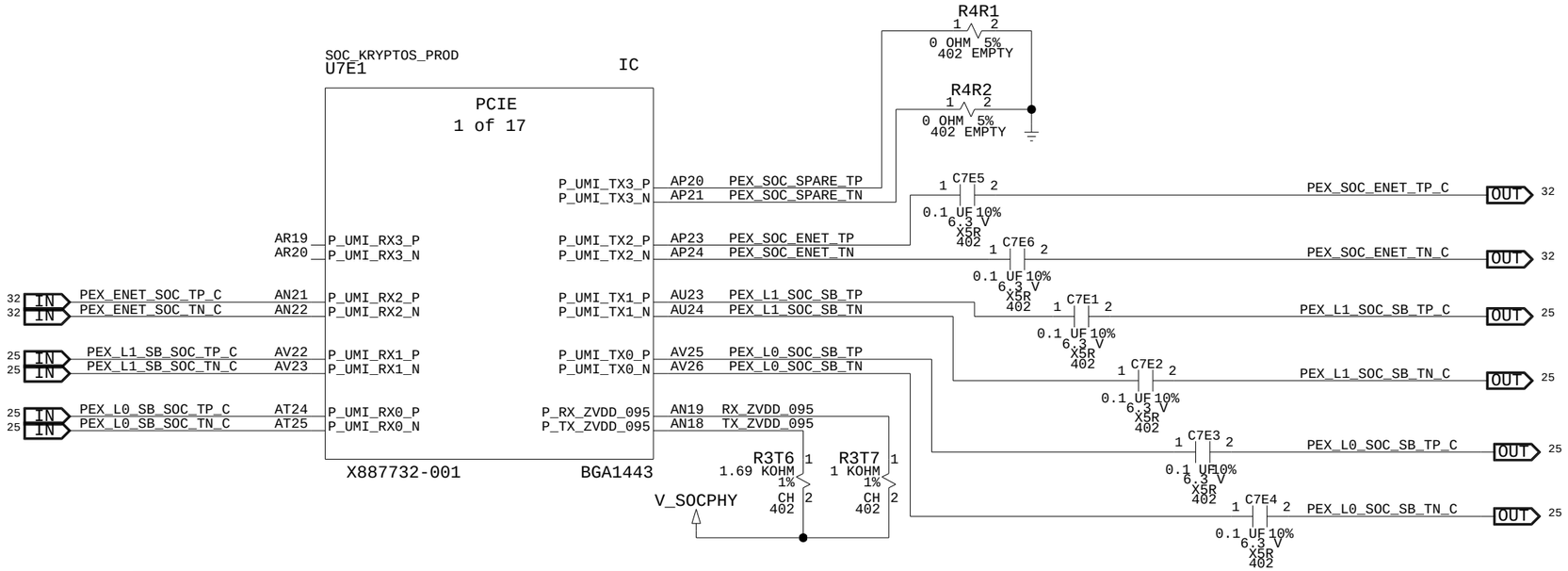
RULES: (APPLIED WHEN POSSIBLE)
1. MSB TO LSB IS TOP TO BOTTOM
2. WHEN POSSIBLE: INPUTS ON LEFT, OUTPUTS ON RIGHT
3. ORDER OF PAGES=CHIP INTERFACES, TERMINATION, POWER, DECOUPLING
4. AVOID USING OFF PAGE CONNECTORS FOR ON PAGE CONNECTIONS
5. LANED SIGNALS ARE GROUPED ON SYMBOLS
6. TRANSIMITTER NAME USED AS PREFIX WITH RX AND TX CONNECTIONS
7. SUFFIX _V  IS USED FOR VOLTAGE RAIL SIGNAL NAMES
8. SUFFIX _DP AND _DN ARE USED FOR DIFFERIENTAL PAIRS
9. UNNAMED NETS ARE NAMED WITH /2 TEXT SIZE
10. SUFFIX _N FOR ACTIVE LOW OR N JUNCTION
12. SUFFIX _P FOR P JUNCTION
13. SUFFIX _EN FOR ENABLE
14. 'CLK' FOR CLOCKS, 'RST' FOR RESETS
15. PWRGD FOR POWER GOOD
16. REV AND FAB ARE SET USING CUSTOM VARIABLES
    TOOLS>OPTIONS>VARIABLES

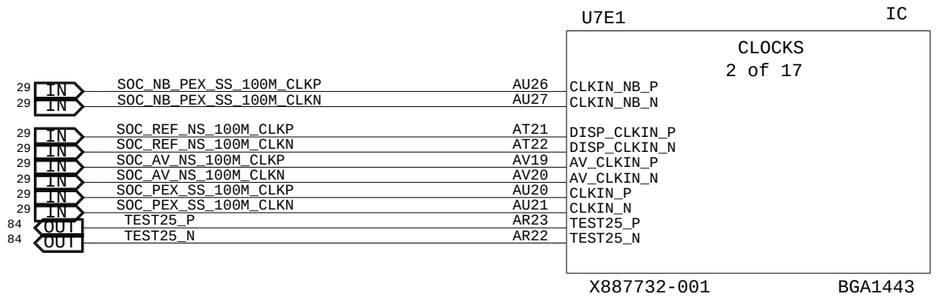
DRAWING
Sat May 31 23:33:16 2014

| | | | | | |
|---|---|---|---|---|---|
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
| | Silverton_Retail | 1/86 | 1/86 | M | 1.0 |

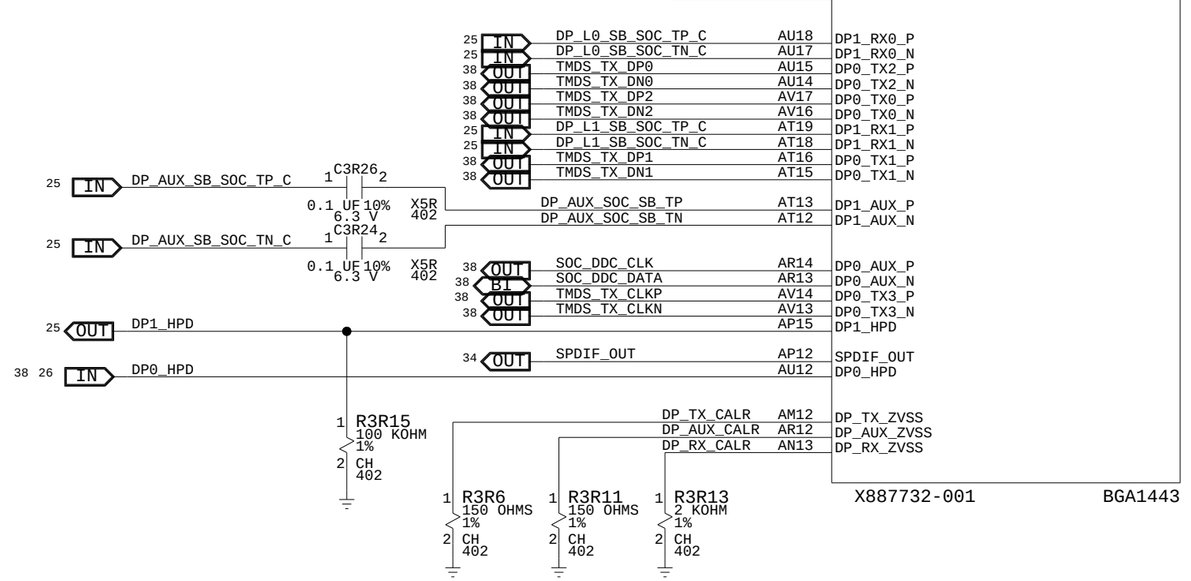
# SOC:PCIEX,CLOCKS,VIDEO




| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X889947-001 | IC | U7E1 | PANTHER IC,CPU,TT,PROD | SOC_PANTHER_PROD |
| X889946-001 | IC | U7E1 | PANTHER IC,CPU,TT,TEST | SOC_PANTHER_TEST |

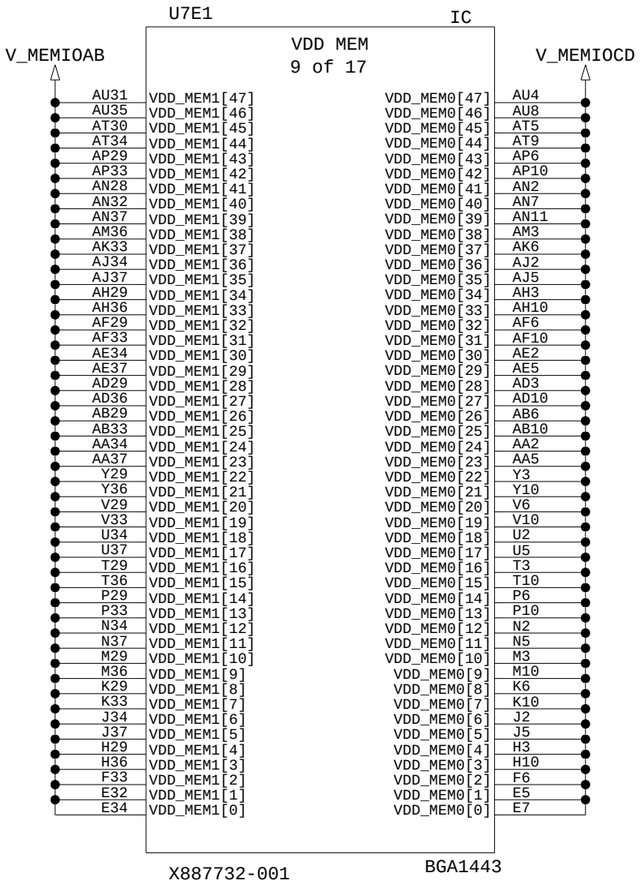


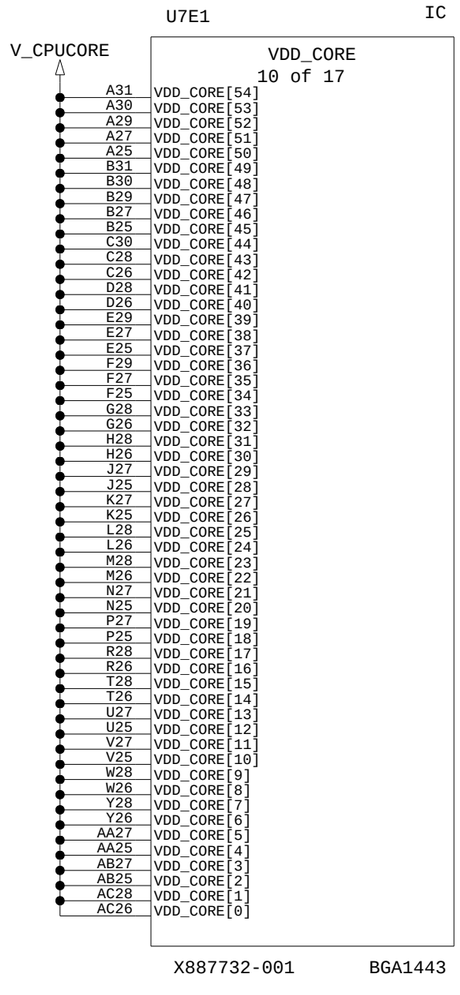

| DVI PCB ROUTING ORDERING | DP PCB ROUTING ORDERING | PIN NAME |
|---|---|---|
| TMDS CLOCK - | DP LANE 3 - | DP0_TX3_N |
| TMDS CLOCK + | DP LANE 3 + | DP0_TX3_P |
| TMDS DATA0 - | DP LANE 2 - | DP0_TX2_N |
| TMDS DATA0 + | DP LANE 2 + | DP0_TX2_P |
| TMDS DATA1 - | DP LANE 1 - | DP0_TX1_N |
| TMDS DATA1 + | DP LANE 1 + | DP0_TX1_P |
| TMDS DATA2 - | DP LANE 0 - | DP0_TX0_N |
| TMDS DATA2 + | DP LANE 0 + | DP0_TX0_P |

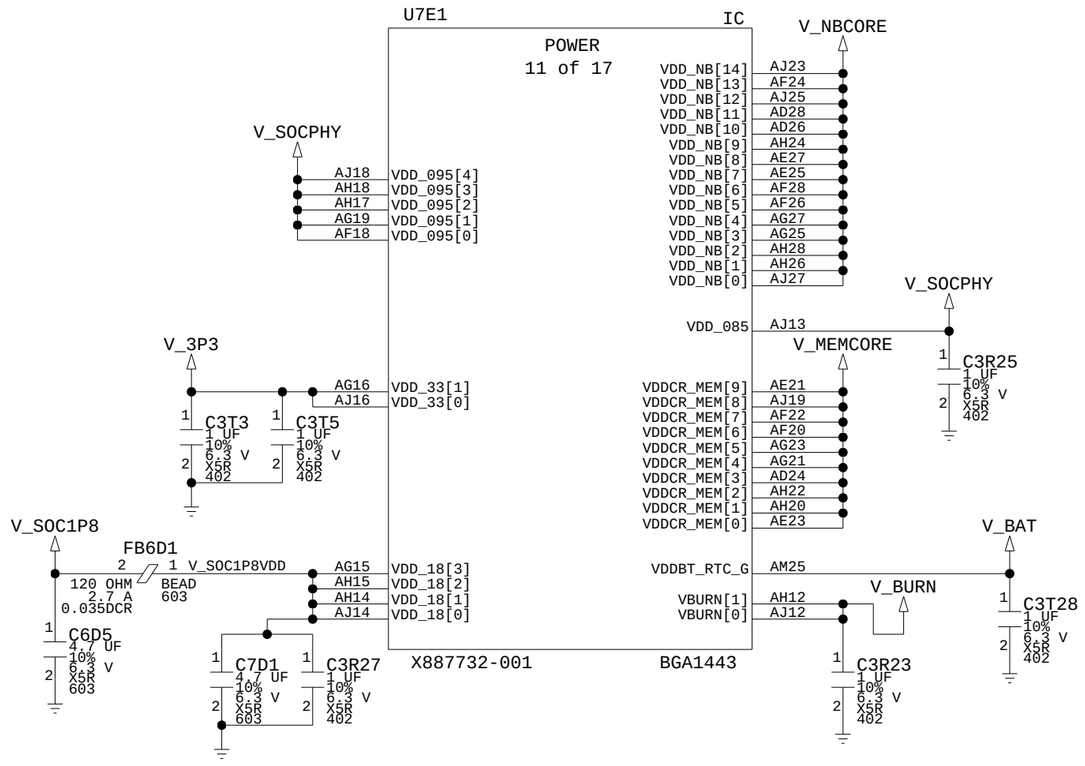



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 2/86 | 2/86 | M | 1.0 |

# SOC: POWER: MEMIO,MEMCORE,CPUCORE,NBCORE,MISC

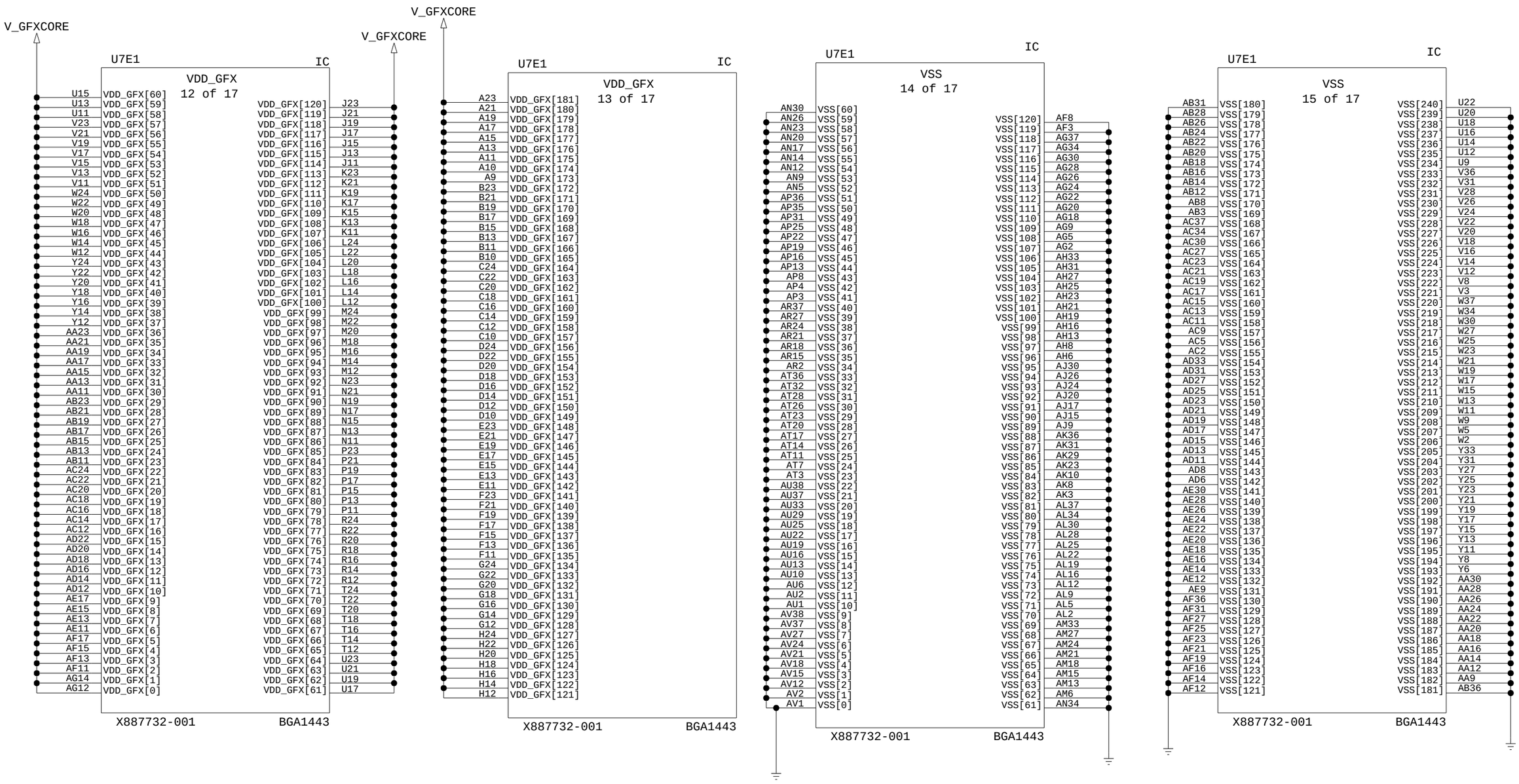



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 3/86 | 3/86 | M | 1.0 |

# SOC: POWER: V_GFXCORE,VSS




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 4/86 | 4/86 | M | 1.0 |

# SOC: MEMORY PARTITION C & D

U7E1 — IC — MEM CHANNEL D 6 of 17 — X887732-001 — BGA1443

| | | | |
|---|---|---|---|
| MD_DQ63 | P2 | MD_DQ63 | |
| MD_DQ62 | W1 | MD_DQ62 | |
| MD_DQ61 | N4 | MD_DQ61 | |
| MD_DQ60 | V2 | MD_DQ60 | |
| MD_DQ59 | N1 | MD_DQ59 | |
| MD_DQ58 | W3 | MD_DQ58 | |
| MD_DQ57 | P1 | MD_DQ57 | |
| MD_DQ56 | W4 | MD_DQ56 | |
| MD_DQ55 | Y2 | MD_DQ55 | |
| MD_DQ54 | M2 | MD_DQ54 | |
| MD_DQ53 | Y1 | MD_DQ53 | |
| MD_DQ52 | M1 | MD_DQ52 | |
| MD_DQ51 | T1 | MD_DQ51 | |
| MD_DQ50 | N3 | MD_DQ50 | |
| MD_DQ49 | U3 | MD_DQ49 | |
| MD_DQ48 | R4 | MD_DQ48 | |
| MD_DQ47 | M7 | MD_DQ47 | |
| MD_DQ46 | R6 | MD_DQ46 | |
| MD_DQ45 | M5 | MD_DQ45 | |
| MD_DQ44 | P7 | MD_DQ44 | |
| MD_DQ43 | M4 | MD_DQ43 | |
| MD_DQ42 | R8 | MD_DQ42 | |
| MD_DQ41 | N6 | MD_DQ41 | |
| MD_DQ40 | T4 | MD_DQ40 | |
| MD_DQ39 | L4 | MD_DQ39 | |
| MD_DQ38 | H1 | MD_DQ38 | |
| MD_DQ37 | L3 | MD_DQ37 | |
| MD_DQ36 | G4 | MD_DQ36 | |
| MD_DQ35 | L1 | MD_DQ35 | |
| MD_DQ34 | H2 | MD_DQ34 | |
| MD_DQ33 | K1 | MD_DQ33 | |
| MD_DQ32 | J1 | MD_DQ32 | |
| MD_DQ31 | H5 | MD_DQ31 | |
| MD_DQ30 | K5 | MD_DQ30 | |
| MD_DQ29 | H4 | MD_DQ29 | |
| MD_DQ28 | K4 | MD_DQ28 | |
| MD_DQ27 | G8 | MD_DQ27 | |
| MD_DQ26 | L6 | MD_DQ26 | |
| MD_DQ25 | H7 | MD_DQ25 | |
| MD_DQ24 | L8 | MD_DQ24 | |
| MD_DQ23 | G3 | MD_DQ23 | |
| MD_DQ22 | C1 | MD_DQ22 | |
| MD_DQ21 | G1 | MD_DQ21 | |
| MD_DQ20 | C3 | MD_DQ20 | |
| MD_DQ19 | F1 | MD_DQ19 | |
| MD_DQ18 | D2 | MD_DQ18 | |
| MD_DQ17 | E1 | MD_DQ17 | |
| MD_DQ16 | D1 | MD_DQ16 | |
| MD_DQ15 | C8 | MD_DQ15 | |
| MD_DQ14 | D5 | MD_DQ14 | |
| MD_DQ13 | E8 | MD_DQ13 | |
| MD_DQ12 | G6 | MD_DQ12 | |
| MD_DQ11 | D9 | MD_DQ11 | |
| MD_DQ10 | F5 | MD_DQ10 | |
| MD_DQ9 | B7 | MD_DQ9 | |
| MD_DQ8 | F4 | MD_DQ8 | |
| MD_DQ7 | A3 | MD_DQ7 | |
| MD_DQ6 | D6 | MD_DQ6 | |
| MD_DQ5 | B3 | MD_DQ5 | |
| MD_DQ4 | A7 | MD_DQ4 | |
| MD_DQ3 | D4 | MD_DQ3 | |
| MD_DQ2 | C6 | MD_DQ2 | |
| MD_DQ1 | C4 | MD_DQ1 | |
| MD_DQ0 | A6 | MD_DQ0 | |
| MD_DQSL_0_P | B5 | MD_DQSL_0_P | |
| MD_DQSL_0_N | A5 | MD_DQSL_0_N | |
| MD_DQSL_1_P | E3 | MD_DQSL_1_P | |
| MD_DQSL_1_N | E4 | MD_DQSL_1_N | |
| MD_DQSL_2_P | J3 | MD_DQSL_2_P | |
| MD_DQSL_2_N | J4 | MD_DQSL_2_N | |
| MD_DQSL_3_P | R1 | MD_DQSL_3_P | |
| MD_DQSL_3_N | T2 | MD_DQSL_3_N | |
| MD_DQSU_0_P | E6 | MD_DQSU_0_P | |
| MD_DQSU_0_N | F7 | MD_DQSU_0_N | |
| MD_DQSU_1_P | J8 | MD_DQSU_1_P | |
| MD_DQSU_1_N | K7 | MD_DQSU_1_N | |
| MD_DQSU_2_P | P4 | MD_DQSU_2_P | |
| MD_DQSU_2_N | P5 | MD_DQSU_2_N | |
| MD_DQSU_3_P | U1 | MD_DQSU_3_P | |
| MD_DQSU_3_N | V1 | MD_DQSU_3_N | |
| MD_DML_0 | A4 | MD_DML_0 | |
| MD_DMU_0 | D7 | MD_DMU_0 | |
| MD_DML_1 | F2 | MD_DML_1 | |
| MD_DMU_1 | J6 | MD_DMU_1 | |
| MD_DML_2 | K2 | MD_DML_2 | |
| MD_DMU_2 | N8 | MD_DMU_2 | |
| MD_DML_3 | U4 | MD_DML_3 | |
| MD_DMU_3 | R3 | MD_DMU_3 | |

V_MEMIOCD

R3R10 40.2 OHM 1% — 1 — 2 EMPTY 402

R3R5 40.2 OHM 1% — 1 — 2 EMPTY 402

| | | | |
|---|---|---|---|
| MD_TEST | AG11 | MD_TEST | |
| MD_CLK0_DP | K9 | MD_CLK0_DP | OUT 12 13 |
| MD_CLK0_DN | J10 | MD_CLK0_DN | OUT 12 13 |
| MD_A15 | V7 | MD_A<15> | B1 12 13 14 |
| MD_A14 | W10 | MD_A<14> | B1 12 13 14 |
| MD_A13 | U10 | MD_A<13> | B1 12 13 14 |
| MD_A12 | W6 | MD_A<12> | B1 12 13 14 |
| MD_A11 | Y5 | MD_A<11> | B1 12 13 14 |
| MD_A10 | N10 | MD_A<10> | B1 12 13 14 |
| MD_A9 | V9 | MD_A<9> | B1 12 13 14 |
| MD_A8 | W7 | MD_A<8> | B1 12 13 14 |
| MD_A7 | U7 | MD_A<7> | B1 12 13 14 |
| MD_A6 | Y7 | MD_A<6> | B1 12 13 14 |
| MD_A5 | V4 | MD_A<5> | B1 12 13 14 |
| MD_A4 | R10 | MD_A<4> | B1 12 13 14 |
| MD_A3 | U8 | MD_A<3> | B1 12 13 14 |
| MD_A2 | Y4 | MD_A<2> | B1 12 13 14 |
| MD_A1 | W8 | MD_A<1> | B1 12 13 14 |
| MD_A0 | T9 | MD_A<0> | B1 12 13 14 |
| MD_BA0 | T7 | MD_BA<0> | B1 12 13 14 |
| MD_BA1 | V5 | MD_BA<1> | B1 12 13 14 |
| MD_BA2 | U6 | MD_BA<2> | B1 12 13 14 |

V_MEMIOCD

R2R5 40.2 OHM 1% — 1 — 2 CH 402

| | | | |
|---|---|---|---|
| MD_CKE0 | N7 | MD_CKE0 | OUT 12 13 14 |
| MD_CAS_N | L10 | MD_CAS_N | OUT 12 13 14 |
| MD_RAS_N | M9 | MD_RAS_N | OUT 12 13 14 |
| MD_CS0_N | R7 | MD_CS0_N | OUT 12 13 14 |
| MD_ODT0 | T5 | MD_ODT0 | OUT 12 13 14 |
| MD_WE_N | P9 | MD_WE_N | OUT 12 13 14 |
| MD_RESET | Y9 | MD_RESET_N | OUT 12 13 14 |
| MD_CKE1 | H9 | | |
| MD_CS1_N | F9 | | |
| MD_ODT1 | G10 | | |

R2R4 — MD_VREFDQ 1 — 2 MD_VREFDQ_MM — OUT — 0 OHM 5% 402 EMPTY

| | | | |
|---|---|---|---|
| MD_VREFDQ | G7 | | |
| MD_ZVDDIO | J7 | MD_ZVDDIO | |

U7E1 — IC — MEM CHANNEL C 5 of 17 — X887732-001 — BGA1443

| | | | |
|---|---|---|---|
| MC_DQ63 | AN8 | MC_DQ63 | |
| MC_DQ62 | AM11 | MC_DQ62 | |
| MC_DQ61 | AM8 | MC_DQ61 | |
| MC_DQ60 | AN10 | MC_DQ60 | |
| MC_DQ59 | AR7 | MC_DQ59 | |
| MC_DQ58 | AP11 | MC_DQ58 | |
| MC_DQ57 | AP9 | MC_DQ57 | |
| MC_DQ56 | AR11 | MC_DQ56 | |
| MC_DQ55 | AV11 | MC_DQ55 | |
| MC_DQ54 | AR8 | MC_DQ54 | |
| MC_DQ53 | AU11 | MC_DQ53 | |
| MC_DQ52 | AV7 | MC_DQ52 | |
| MC_DQ51 | AV10 | MC_DQ51 | |
| MC_DQ50 | AT8 | MC_DQ50 | |
| MC_DQ49 | AR10 | MC_DQ49 | |
| MC_DQ48 | AV8 | MC_DQ48 | |
| MC_DQ47 | AT2 | MC_DQ47 | |
| MC_DQ46 | AN6 | MC_DQ46 | |
| MC_DQ45 | AP2 | MC_DQ45 | |
| MC_DQ44 | AN4 | MC_DQ44 | |
| MC_DQ43 | AT1 | MC_DQ43 | |
| MC_DQ42 | AM7 | MC_DQ42 | |
| MC_DQ41 | AN3 | MC_DQ41 | |
| MC_DQ40 | AP7 | MC_DQ40 | |
| MC_DQ39 | AU7 | MC_DQ39 | |
| MC_DQ38 | AV3 | MC_DQ38 | |
| MC_DQ37 | AV6 | MC_DQ37 | |
| MC_DQ36 | AU3 | MC_DQ36 | |
| MC_DQ35 | AT6 | MC_DQ35 | |
| MC_DQ34 | AR4 | MC_DQ34 | |
| MC_DQ33 | AV5 | MC_DQ33 | |
| MC_DQ32 | AT4 | MC_DQ32 | |
| MC_DQ31 | AJ8 | MC_DQ31 | |
| MC_DQ30 | AL6 | MC_DQ30 | |
| MC_DQ29 | AH4 | MC_DQ29 | |
| MC_DQ28 | AL8 | MC_DQ28 | |
| MC_DQ27 | AH5 | MC_DQ27 | |
| MC_DQ26 | AM5 | MC_DQ26 | |
| MC_DQ25 | AJ6 | MC_DQ25 | |
| MC_DQ24 | AM4 | MC_DQ24 | |
| MC_DQ23 | AR1 | MC_DQ23 | |
| MC_DQ22 | AK1 | MC_DQ22 | |
| MC_DQ21 | AP1 | MC_DQ21 | |
| MC_DQ20 | AJ4 | MC_DQ20 | |
| MC_DQ19 | AN1 | MC_DQ19 | |
| MC_DQ18 | AK2 | MC_DQ18 | |
| MC_DQ17 | AM1 | MC_DQ17 | |
| MC_DQ16 | AL1 | MC_DQ16 | |
| MC_DQ15 | AC1 | MC_DQ15 | |
| MC_DQ14 | AG4 | MC_DQ14 | |
| MC_DQ13 | AB2 | MC_DQ13 | |
| MC_DQ12 | AG3 | MC_DQ12 | |
| MC_DQ11 | AB1 | MC_DQ11 | |
| MC_DQ10 | AH1 | MC_DQ10 | |
| MC_DQ9 | AC3 | MC_DQ9 | |
| MC_DQ8 | AH2 | MC_DQ8 | |
| MC_DQ7 | AJ3 | MC_DQ7 | |
| MC_DQ6 | AA3 | MC_DQ6 | |
| MC_DQ5 | AJ1 | MC_DQ5 | |
| MC_DQ4 | AA1 | MC_DQ4 | |
| MC_DQ3 | AE3 | MC_DQ3 | |
| MC_DQ2 | AA4 | MC_DQ2 | |
| MC_DQ1 | AE4 | MC_DQ1 | |
| MC_DQ0 | AD1 | MC_DQ0 | |
| MC_DQSL_0_P | AD2 | MC_DQSL_0_P | |
| MC_DQSL_0_N | AE1 | MC_DQSL_0_N | |
| MC_DQSL_1_P | AL3 | MC_DQSL_1_P | |
| MC_DQSL_1_N | AL4 | MC_DQSL_1_N | |
| MC_DQSL_2_P | AV4 | MC_DQSL_2_P | |
| MC_DQSL_2_N | AU5 | MC_DQSL_2_N | |
| MC_DQSL_3_P | AU9 | MC_DQSL_3_P | |
| MC_DQSL_3_N | AV9 | MC_DQSL_3_N | |
| MC_DQSU_0_P | AF2 | MC_DQSU_0_P | |
| MC_DQSU_0_N | AG1 | MC_DQSU_0_N | |
| MC_DQSU_1_P | AK4 | MC_DQSU_1_P | |
| MC_DQSU_1_N | AK5 | MC_DQSU_1_N | |
| MC_DQSU_2_P | AP5 | MC_DQSU_2_P | |
| MC_DQSU_2_N | AR5 | MC_DQSU_2_N | |
| MC_DQSU_3_P | AM9 | MC_DQSU_3_P | |
| MC_DQSU_3_N | AM10 | MC_DQSU_3_N | |
| MC_DML_0 | AF1 | MC_DML_0 | |
| MC_DMU_0 | AC4 | MC_DMU_0 | |
| MC_DML_1 | AM2 | MC_DML_1 | |
| MC_DMU_1 | AK7 | MC_DMU_1 | |
| MC_DML_2 | AR6 | MC_DML_2 | |
| MC_DMU_2 | AR3 | MC_DMU_2 | |
| MC_DML_3 | AT10 | MC_DML_3 | |
| MC_DMU_3 | AR9 | MC_DMU_3 | |

V_MEMIOCD

R3R9 40.2 OHM 1% — 1 — 2 EMPTY 402

R3R4 40.2 OHM 1% — 1 — 2 EMPTY 402

| | | | |
|---|---|---|---|
| MC_TEST | AJ11 | MC_TEST | |
| MC_CLK0_DP | AK9 | MC_CLK0_DP | OUT 15 16 |
| MC_CLK0_DN | AJ10 | MC_CLK0_DN | OUT 15 16 |
| MC_A15 | AC8 | MC_A<15> | B1 15 16 17 |
| MC_A14 | AA7 | MC_A<14> | B1 15 16 17 |
| MC_A13 | AA10 | MC_A<13> | B1 15 16 17 |
| MC_A12 | AC6 | MC_A<12> | B1 15 16 17 |
| MC_A11 | AB4 | MC_A<11> | B1 15 16 17 |
| MC_A10 | AE10 | MC_A<10> | B1 15 16 17 |
| MC_A9 | AC7 | MC_A<9> | B1 15 16 17 |
| MC_A8 | AB9 | MC_A<8> | B1 15 16 17 |
| MC_A7 | AD9 | MC_A<7> | B1 15 16 17 |
| MC_A6 | AA8 | MC_A<6> | B1 15 16 17 |
| MC_A5 | AD5 | MC_A<5> | B1 15 16 17 |
| MC_A4 | AC10 | MC_A<4> | B1 15 16 17 |
| MC_A3 | AD7 | MC_A<3> | B1 15 16 17 |
| MC_A2 | AB5 | MC_A<2> | B1 15 16 17 |
| MC_A1 | AB7 | MC_A<1> | B1 15 16 17 |
| MC_A0 | AE7 | MC_A<0> | B1 15 16 17 |
| MC_BA0 | AE8 | MC_BA<0> | B1 15 16 17 |
| MC_BA1 | AD4 | MC_BA<1> | B1 15 16 17 |
| MC_BA2 | AE6 | MC_BA<2> | B1 15 16 17 |

V_MEMIOCD

R3R7 40.2 OHM 1% — 1 — 2 CH 402

| | | | |
|---|---|---|---|
| MC_CKE0 | AH9 | MC_CKE0 | OUT 15 16 17 |
| MC_CAS_N | AG10 | MC_CAS_N | OUT 15 16 17 |
| MC_RAS_N | AJ7 | MC_RAS_N | OUT 15 16 17 |
| MC_CS0_N | AF9 | MC_CS0_N | OUT 15 16 17 |
| MC_ODT0 | AF4 | MC_ODT0 | OUT 15 16 17 |
| MC_WE_N | AG7 | MC_WE_N | OUT 15 16 17 |
| MC_RESET | AA6 | MC_RESET_N | OUT 15 16 17 |
| MC_CKE1 | AH7 | | |
| MC_CS1_N | AF7 | | |
| MC_ODT1 | AG8 | | |

R3R1 — MC_VREFDQ 1 — 2 MC_VREFDQ_MM — OUT — 0 OHM 5% 402 EMPTY

| | | | |
|---|---|---|---|
| MC_VREFDQ | AL7 | | |
| MC_ZVDDIO | AL10 | MC_ZVDDIO | |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 5/86 | 5/86 | M | 1.0 |

# SOC: MEMORY PARTITION A & B

U7E1 IC — MEM CHANNEL B 7 of 17 — X887732-001 BGA1443

| | | | |
|---|---|---|---|
| MB_DQ63 | V37 | MB_DQ63 | BI 19 |
| MB_DQ62 | N38 | MB_DQ62 | BI 19 |
| MB_DQ61 | W38 | MB_DQ61 | BI 19 |
| MB_DQ60 | P37 | MB_DQ60 | BI 19 |
| MB_DQ59 | W36 | MB_DQ59 | BI 19 |
| MB_DQ58 | N35 | MB_DQ58 | BI 19 |
| MB_DQ57 | V38 | MB_DQ57 | BI 19 |
| MB_DQ56 | N36 | MB_DQ56 | BI 19 |
| MB_DQ55 | M37 | MB_DQ55 | BI 19 |
| MB_DQ54 | Y38 | MB_DQ54 | BI 19 |
| MB_DQ53 | M38 | MB_DQ53 | BI 19 |
| MB_DQ52 | Y37 | MB_DQ52 | BI 19 |
| MB_DQ51 | T38 | MB_DQ51 | BI 19 |
| MB_DQ50 | W35 | MB_DQ50 | BI 19 |
| MB_DQ49 | R35 | MB_DQ49 | BI 19 |
| MB_DQ48 | U36 | MB_DQ48 | BI 19 |
| MB_DQ47 | R33 | MB_DQ47 | BI 19 |
| MB_DQ46 | M32 | MB_DQ46 | BI 19 |
| MB_DQ45 | R31 | MB_DQ45 | BI 19 |
| MB_DQ44 | N33 | MB_DQ44 | BI 19 |
| MB_DQ43 | T35 | MB_DQ43 | BI 19 |
| MB_DQ42 | M34 | MB_DQ42 | BI 19 |
| MB_DQ41 | P32 | MB_DQ41 | BI 19 |
| MB_DQ40 | M35 | MB_DQ40 | BI 19 |
| MB_DQ39 | G35 | MB_DQ39 | BI 19 |
| MB_DQ38 | L38 | MB_DQ38 | BI 19 |
| MB_DQ37 | H37 | MB_DQ37 | BI 19 |
| MB_DQ36 | L35 | MB_DQ36 | BI 19 |
| MB_DQ35 | H38 | MB_DQ35 | BI 19 |
| MB_DQ34 | L36 | MB_DQ34 | BI 19 |
| MB_DQ33 | J35 | MB_DQ33 | BI 19 |
| MB_DQ32 | K37 | MB_DQ32 | BI 19 |
| MB_DQ31 | K34 | MB_DQ31 | BI 18 |
| MB_DQ30 | H34 | MB_DQ30 | BI 18 |
| MB_DQ29 | L33 | MB_DQ29 | BI 18 |
| MB_DQ28 | H32 | MB_DQ28 | BI 18 |
| MB_DQ27 | L31 | MB_DQ27 | BI 18 |
| MB_DQ26 | H35 | MB_DQ26 | BI 18 |
| MB_DQ25 | K35 | MB_DQ25 | BI 18 |
| MB_DQ24 | G31 | MB_DQ24 | BI 18 |
| MB_DQ23 | C36 | MB_DQ23 | BI 18 |
| MB_DQ22 | G36 | MB_DQ22 | BI 18 |
| MB_DQ21 | C38 | MB_DQ21 | BI 18 |
| MB_DQ20 | G38 | MB_DQ20 | BI 18 |
| MB_DQ19 | E35 | MB_DQ19 | BI 18 |
| MB_DQ18 | F38 | MB_DQ18 | BI 18 |
| MB_DQ17 | D38 | MB_DQ17 | BI 18 |
| MB_DQ16 | E38 | MB_DQ16 | BI 18 |
| MB_DQ15 | D34 | MB_DQ15 | BI 18 |
| MB_DQ14 | C31 | MB_DQ14 | BI 18 |
| MB_DQ13 | F34 | MB_DQ13 | BI 18 |
| MB_DQ12 | B32 | MB_DQ12 | BI 18 |
| MB_DQ11 | F35 | MB_DQ11 | BI 18 |
| MB_DQ10 | E31 | MB_DQ10 | BI 18 |
| MB_DQ9 | G33 | MB_DQ9 | BI 18 |
| MB_DQ8 | D30 | MB_DQ8 | BI 18 |
| MB_DQ7 | A32 | MB_DQ7 | BI 18 |
| MB_DQ6 | B36 | MB_DQ6 | BI 18 |
| MB_DQ5 | D33 | MB_DQ5 | BI 18 |
| MB_DQ4 | A36 | MB_DQ4 | BI 18 |
| MB_DQ3 | D35 | MB_DQ3 | BI 18 |
| MB_DQ2 | A35 | MB_DQ2 | BI 18 |
| MB_DQ1 | A33 | MB_DQ1 | BI 18 |
| MB_DQ0 | C35 | MB_DQ0 | BI 18 |
| MB_DQSL_0_P | A34 | MB_DQSL_0_P | BI 18 |
| MB_DQSL_0_N | B34 | MB_DQSL_0_N | BI 18 |
| MB_DQSL_1_P | F37 | MB_DQSL_1_P | BI 18 |
| MB_DQSL_1_N | E36 | MB_DQSL_1_N | BI 18 |
| MB_DQSL_2_P | K38 | MB_DQSL_2_P | BI 19 |
| MB_DQSL_2_N | J38 | MB_DQSL_2_N | BI 19 |
| MB_DQSL_3_P | U38 | MB_DQSL_3_P | BI 19 |
| MB_DQSL_3_N | T37 | MB_DQSL_3_N | BI 18 |
| MB_DQSU_0_P | E33 | MB_DQSU_0_P | BI 18 |
| MB_DQSU_0_N | D32 | MB_DQSU_0_N | BI 18 |
| MB_DQSU_1_P | J31 | MB_DQSU_1_P | BI 18 |
| MB_DQSU_1_N | J33 | MB_DQSU_1_N | BI 18 |
| MB_DQSU_2_P | P35 | MB_DQSU_2_P | BI 19 |
| MB_DQSU_2_N | P34 | MB_DQSU_2_N | BI 19 |
| MB_DQSU_3_P | R38 | MB_DQSU_3_P | BI 19 |
| MB_DQSU_3_N | P38 | MB_DQSU_3_N | BI 19 |
| MB_DML_0 | C33 | MB_DML_0 | BI 18 |
| MB_DMU_0 | F32 | MB_DMU_0 | BI 18 |
| MB_DML_1 | D37 | MB_DML_1 | BI 18 |
| MB_DMU_1 | K32 | MB_DMU_1 | BI 18 |
| MB_DML_2 | J36 | MB_DML_2 | BI 19 |
| MB_DMU_2 | N31 | MB_DMU_2 | BI 19 |
| MB_DML_3 | R36 | MB_DML_3 | BI 19 |
| MB_DMU_3 | U35 | MB_DMU_3 | BI 19 |

V_MEMIOAB

R3T17 40.2 OHM 1% 2 EMPTY 402

R3T18 40.2 OHM 1% 2 EMPTY 402

MB_TEST AJ28 MB_TEST

| | | | |
|---|---|---|---|
| MB_CLK0_DP | K30 | MB_CLK0_DP | OUT 18 19 |
| MB_CLK0_DN | J29 | MB_CLK0_DN | OUT 18 19 |
| MB_A15 | V32 | MB_A<15> | BI 18 19 20 |
| MB_A14 | W29 | MB_A<14> | BI 18 19 20 |
| MB_A13 | U29 | MB_A<13> | BI 18 19 20 |
| MB_A12 | W33 | MB_A<12> | BI 18 19 20 |
| MB_A11 | Y34 | MB_A<11> | BI 18 19 20 |
| MB_A10 | N29 | MB_A<10> | BI 18 19 20 |
| MB_A9 | V30 | MB_A<9> | BI 18 19 20 |
| MB_A8 | W32 | MB_A<8> | BI 18 19 20 |
| MB_A7 | U32 | MB_A<7> | BI 18 19 20 |
| MB_A6 | Y32 | MB_A<6> | BI 18 19 20 |
| MB_A5 | V35 | MB_A<5> | BI 18 19 20 |
| MB_A4 | R29 | MB_A<4> | BI 18 19 20 |
| MB_A3 | U31 | MB_A<3> | BI 18 19 20 |
| MB_A2 | Y35 | MB_A<2> | BI 18 19 20 |
| MB_A1 | W31 | MB_A<1> | BI 18 19 20 |
| MB_A0 | T30 | MB_A<0> | BI 18 19 20 |
| MB_BA0 | T32 | MB_BA<0> | BI 18 19 20 |
| MB_BA1 | V34 | MB_BA<1> | BI 18 19 20 |
| MB_BA2 | U33 | MB_BA<2> | BI 18 19 20 |
| MB_CKE0 | N32 | MB_CKE0 | OUT 18 19 20 |
| MB_CAS_N | L29 | MB_CAS_N | OUT 18 19 20 |
| MB_RAS_N | M30 | MB_RAS_N | OUT 18 19 20 |
| MB_CS0_N | R32 | MB_CS0_N | OUT 18 19 20 |
| MB_ODT0 | T34 | MB_ODT0 | OUT 18 19 20 |
| MB_WE_N | P30 | MB_WE_N | OUT 18 19 20 |
| MB_RESET | Y30 | MB_RESET_N | OUT 18 19 20 |
| MB_CKE1 | H30 | | |
| MB_CS1_N | F30 | | |
| MB_ODT1 | G29 | | |
| MB_VREFDQ | G32 | | |
| MB_ZVDDIO | J32 | MB_ZVDDIO | |

R2T2 MB_VREFDQ 1 2 MB_VREFDQ_MM OUT — 0 OHM 5% 402 EMPTY

V_MEMIOAB

R2T1 40.2 OHM 1% CH 402 1 2

U7E1 IC — MEM CHANNEL A 8 of 17 — X887732-001 BGA1443

| | | | |
|---|---|---|---|
| MA_DQ63 | AM28 | MA_DQ63 | BI 22 |
| MA_DQ62 | AN31 | MA_DQ62 | BI 22 |
| MA_DQ61 | AP28 | MA_DQ61 | BI 22 |
| MA_DQ60 | AM30 | MA_DQ60 | BI 22 |
| MA_DQ59 | AR28 | MA_DQ59 | BI 22 |
| MA_DQ58 | AM31 | MA_DQ58 | BI 22 |
| MA_DQ57 | AN29 | MA_DQ57 | BI 22 |
| MA_DQ56 | AR32 | MA_DQ56 | BI 22 |
| MA_DQ55 | AV32 | MA_DQ55 | BI 22 |
| MA_DQ54 | AU28 | MA_DQ54 | BI 22 |
| MA_DQ53 | AR31 | MA_DQ53 | BI 22 |
| MA_DQ52 | AV28 | MA_DQ52 | BI 22 |
| MA_DQ51 | AT31 | MA_DQ51 | BI 22 |
| MA_DQ50 | AV29 | MA_DQ50 | BI 22 |
| MA_DQ49 | AR29 | MA_DQ49 | BI 22 |
| MA_DQ48 | AT29 | MA_DQ48 | BI 22 |
| MA_DQ47 | AN33 | MA_DQ47 | BI 22 |
| MA_DQ46 | AT37 | MA_DQ46 | BI 22 |
| MA_DQ45 | AM32 | MA_DQ45 | BI 22 |
| MA_DQ44 | AR36 | MA_DQ44 | BI 22 |
| MA_DQ43 | AP32 | MA_DQ43 | BI 22 |
| MA_DQ42 | AP37 | MA_DQ42 | BI 22 |
| MA_DQ41 | AR34 | MA_DQ41 | BI 22 |
| MA_DQ40 | AT38 | MA_DQ40 | BI 22 |
| MA_DQ39 | AU36 | MA_DQ39 | BI 22 |
| MA_DQ38 | AV33 | MA_DQ38 | BI 22 |
| MA_DQ37 | AV36 | MA_DQ37 | BI 22 |
| MA_DQ36 | AU32 | MA_DQ36 | BI 22 |
| MA_DQ35 | AR35 | MA_DQ35 | BI 22 |
| MA_DQ34 | AT33 | MA_DQ34 | BI 22 |
| MA_DQ33 | AV35 | MA_DQ33 | BI 22 |
| MA_DQ32 | AR33 | MA_DQ32 | BI 22 |
| MA_DQ31 | AL33 | MA_DQ31 | BI 21 |
| MA_DQ30 | AJ31 | MA_DQ30 | BI 21 |
| MA_DQ29 | AM34 | MA_DQ29 | BI 21 |
| MA_DQ28 | AJ33 | MA_DQ28 | BI 21 |
| MA_DQ27 | AM35 | MA_DQ27 | BI 21 |
| MA_DQ26 | AH35 | MA_DQ26 | BI 21 |
| MA_DQ25 | AL31 | MA_DQ25 | BI 21 |
| MA_DQ24 | AH34 | MA_DQ24 | BI 21 |
| MA_DQ23 | AJ35 | MA_DQ23 | BI 21 |
| MA_DQ22 | AP38 | MA_DQ22 | BI 21 |
| MA_DQ21 | AK38 | MA_DQ21 | BI 21 |
| MA_DQ20 | AR38 | MA_DQ20 | BI 21 |
| MA_DQ19 | AK37 | MA_DQ19 | BI 21 |
| MA_DQ18 | AM37 | MA_DQ18 | BI 21 |
| MA_DQ17 | AM38 | MA_DQ17 | BI 21 |
| MA_DQ16 | AN38 | MA_DQ16 | BI 21 |
| MA_DQ15 | AG36 | MA_DQ15 | BI 21 |
| MA_DQ14 | AB37 | MA_DQ14 | BI 21 |
| MA_DQ13 | AG35 | MA_DQ13 | BI 21 |
| MA_DQ12 | AC38 | MA_DQ12 | BI 21 |
| MA_DQ11 | AH38 | MA_DQ11 | BI 21 |
| MA_DQ10 | AB38 | MA_DQ10 | BI 21 |
| MA_DQ9 | AG38 | MA_DQ9 | BI 21 |
| MA_DQ8 | AA35 | MA_DQ8 | BI 21 |
| MA_DQ7 | AA38 | MA_DQ7 | BI 21 |
| MA_DQ6 | AJ38 | MA_DQ6 | BI 21 |
| MA_DQ5 | AA36 | MA_DQ5 | BI 21 |
| MA_DQ4 | AJ36 | MA_DQ4 | BI 21 |
| MA_DQ3 | AE38 | MA_DQ3 | BI 21 |
| MA_DQ2 | AH37 | MA_DQ2 | BI 21 |
| MA_DQ1 | AD37 | MA_DQ1 | BI 21 |
| MA_DQ0 | AF38 | MA_DQ0 | BI 21 |
| MA_DQSL_0_P | AE35 | MA_DQSL_0_P | BI 21 |
| MA_DQSL_0_N | AE36 | MA_DQSL_0_N | BI 21 |
| MA_DQSL_1_P | AL35 | MA_DQSL_1_P | BI 21 |
| MA_DQSL_1_N | AL36 | MA_DQSL_1_N | BI 21 |
| MA_DQSL_2_P | AV34 | MA_DQSL_2_P | BI 22 |
| MA_DQSL_2_N | AU34 | MA_DQSL_2_N | BI 22 |
| MA_DQSL_3_P | AU30 | MA_DQSL_3_P | BI 22 |
| MA_DQSL_3_N | AV30 | MA_DQSL_3_N | BI 22 |
| MA_DQSU_0_P | AC35 | MA_DQSU_0_P | BI 21 |
| MA_DQSU_0_N | AC36 | MA_DQSU_0_N | BI 21 |
| MA_DQSU_1_P | AK34 | MA_DQSU_1_P | BI 21 |
| MA_DQSU_1_N | AK35 | MA_DQSU_1_N | BI 21 |
| MA_DQSU_2_P | AN35 | MA_DQSU_2_P | BI 22 |
| MA_DQSU_2_N | AN36 | MA_DQSU_2_N | BI 22 |
| MA_DQSU_3_P | AR30 | MA_DQSU_3_P | BI 22 |
| MA_DQSU_3_N | AP30 | MA_DQSU_3_N | BI 22 |
| MA_DML_0 | AD38 | MA_DML_0 | BI 21 |
| MA_DMU_0 | AF37 | MA_DMU_0 | BI 21 |
| MA_DML_1 | AL38 | MA_DML_1 | BI 21 |
| MA_DMU_1 | AK32 | MA_DMU_1 | BI 21 |
| MA_DML_2 | AT35 | MA_DML_2 | BI 22 |
| MA_DMU_2 | AP34 | MA_DMU_2 | BI 22 |
| MA_DML_3 | AV31 | MA_DML_3 | BI 22 |
| MA_DMU_3 | AM29 | MA_DMU_3 | BI 22 |

V_MEMIOAB

R3T16 40.2 OHM 1% 2 EMPTY 402

R3T15 40.2 OHM 1% 2 EMPTY 402

MA_TEST AK28 MA_TEST

| | | | |
|---|---|---|---|
| MA_CLK0_DP | AK30 | MA_CLK0_DP | OUT 21 22 |
| MA_CLK0_DN | AJ29 | MA_CLK0_DN | OUT 21 22 |
| MA_A15 | AC31 | MA_A<15> | BI 21 22 23 |
| MA_A14 | AA32 | MA_A<14> | BI 21 22 23 |
| MA_A13 | AA29 | MA_A<13> | BI 21 22 23 |
| MA_A12 | AC33 | MA_A<12> | BI 21 22 23 |
| MA_A11 | AB35 | MA_A<11> | BI 21 22 23 |
| MA_A10 | AE29 | MA_A<10> | BI 21 22 23 |
| MA_A9 | AC32 | MA_A<9> | BI 21 22 23 |
| MA_A8 | AB30 | MA_A<8> | BI 21 22 23 |
| MA_A7 | AD30 | MA_A<7> | BI 21 22 23 |
| MA_A6 | AA31 | MA_A<6> | BI 21 22 23 |
| MA_A5 | AD34 | MA_A<5> | BI 21 22 23 |
| MA_A4 | AC29 | MA_A<4> | BI 21 22 23 |
| MA_A3 | AD32 | MA_A<3> | BI 21 22 23 |
| MA_A2 | AB34 | MA_A<2> | BI 21 22 23 |
| MA_A1 | AB32 | MA_A<1> | BI 21 22 23 |
| MA_A0 | AE32 | MA_A<0> | BI 21 22 23 |
| MA_BA0 | AE31 | MA_BA<0> | BI 21 22 23 |
| MA_BA1 | AD35 | MA_BA<1> | BI 21 22 23 |
| MA_BA2 | AE33 | MA_BA<2> | BI 21 22 23 |
| MA_CKE0 | AH30 | MA_CKE0 | OUT 21 22 23 |
| MA_CAS_N | AG29 | MA_CAS_N | OUT 21 22 23 |
| MA_RAS_N | AJ32 | MA_RAS_N | OUT 21 22 23 |
| MA_CS0_N | AF30 | MA_CS0_N | OUT 21 22 23 |
| MA_ODT0 | AF35 | MA_ODT0 | OUT 21 22 23 |
| MA_WE_N | AG32 | MA_WE_N | OUT 21 22 23 |
| MA_RESET | AA33 | MA_RESET_N | OUT 21 22 23 |
| MA_CKE1 | AH32 | | |
| MA_CS1_N | AF32 | | |
| MA_ODT1 | AG31 | | |
| MA_VREFDQ | AL32 | | |
| MA_ZVDDIO | AL29 | MA_ZVDDIO | |

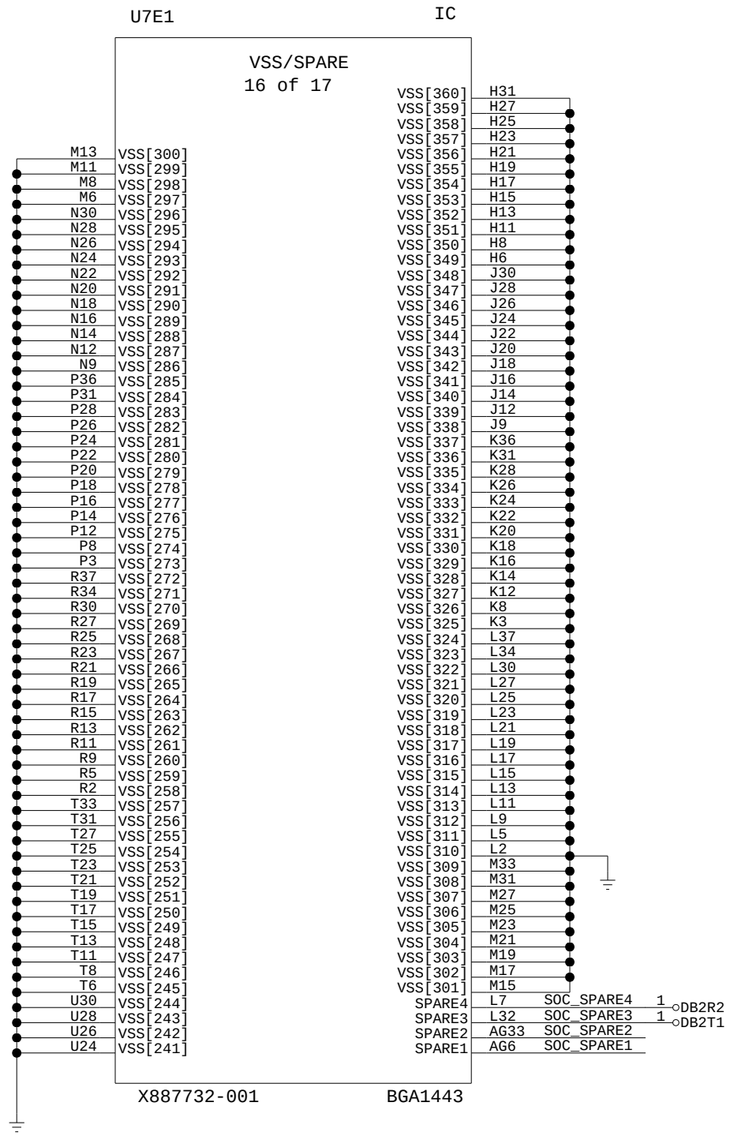
R3T14 MA_VREFDQ 1 2 MA_VREFDQ_MM OUT — 0 OHM 5% 402 EMPTY

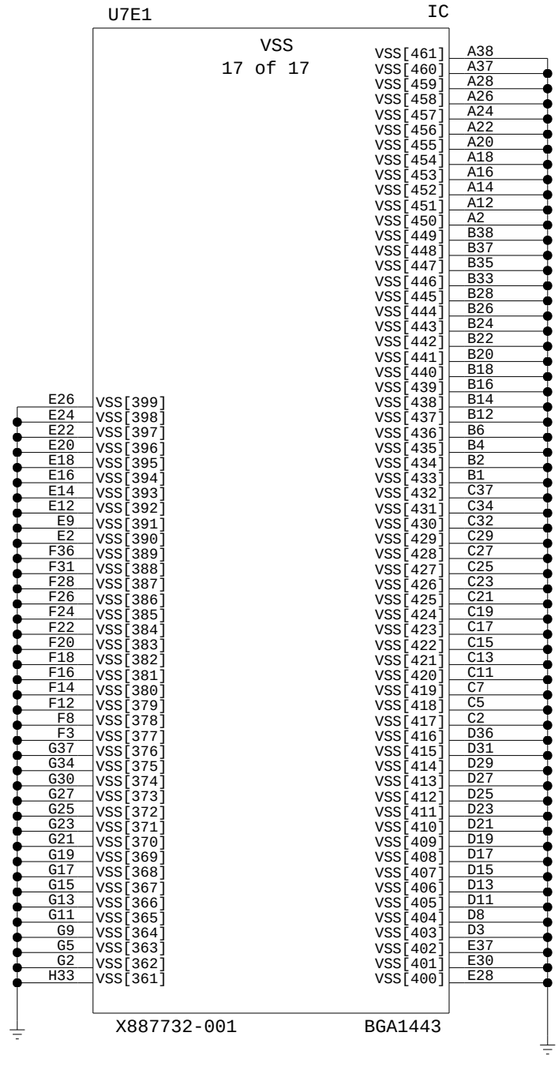
V_MEMIOAB

R3T13 40.2 OHM 1% CH 402 1 2

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 6/86 | 6/86 | M | 1.0 |

# SOC: VSS,SPARE




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 7/86 | 7/86 | M | 1.0 |

# SOC: DEBUG,SB SIGNALS

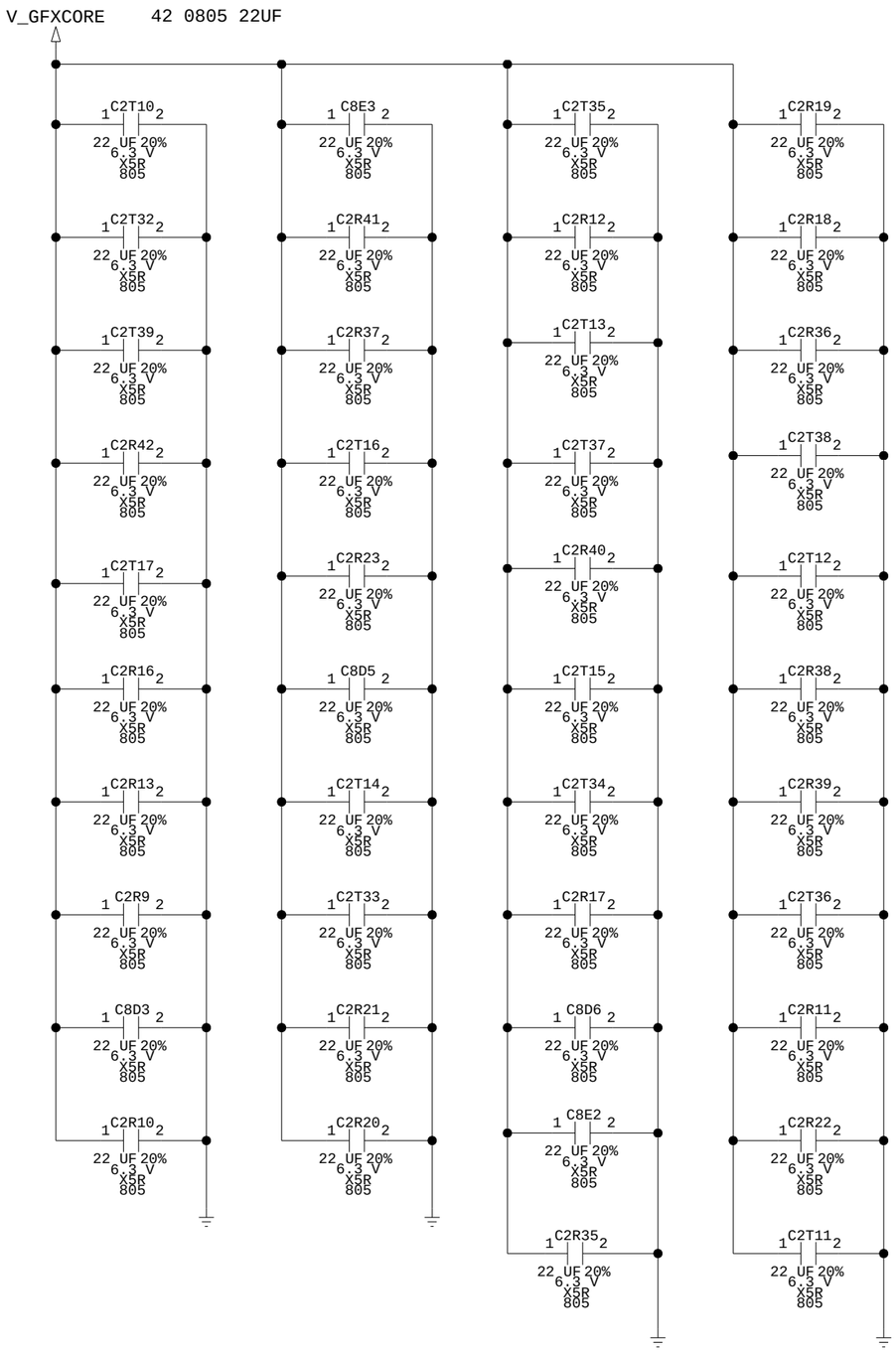
X32K_X1 INTENTIONALLY
CONNECTED TO X32K_X2

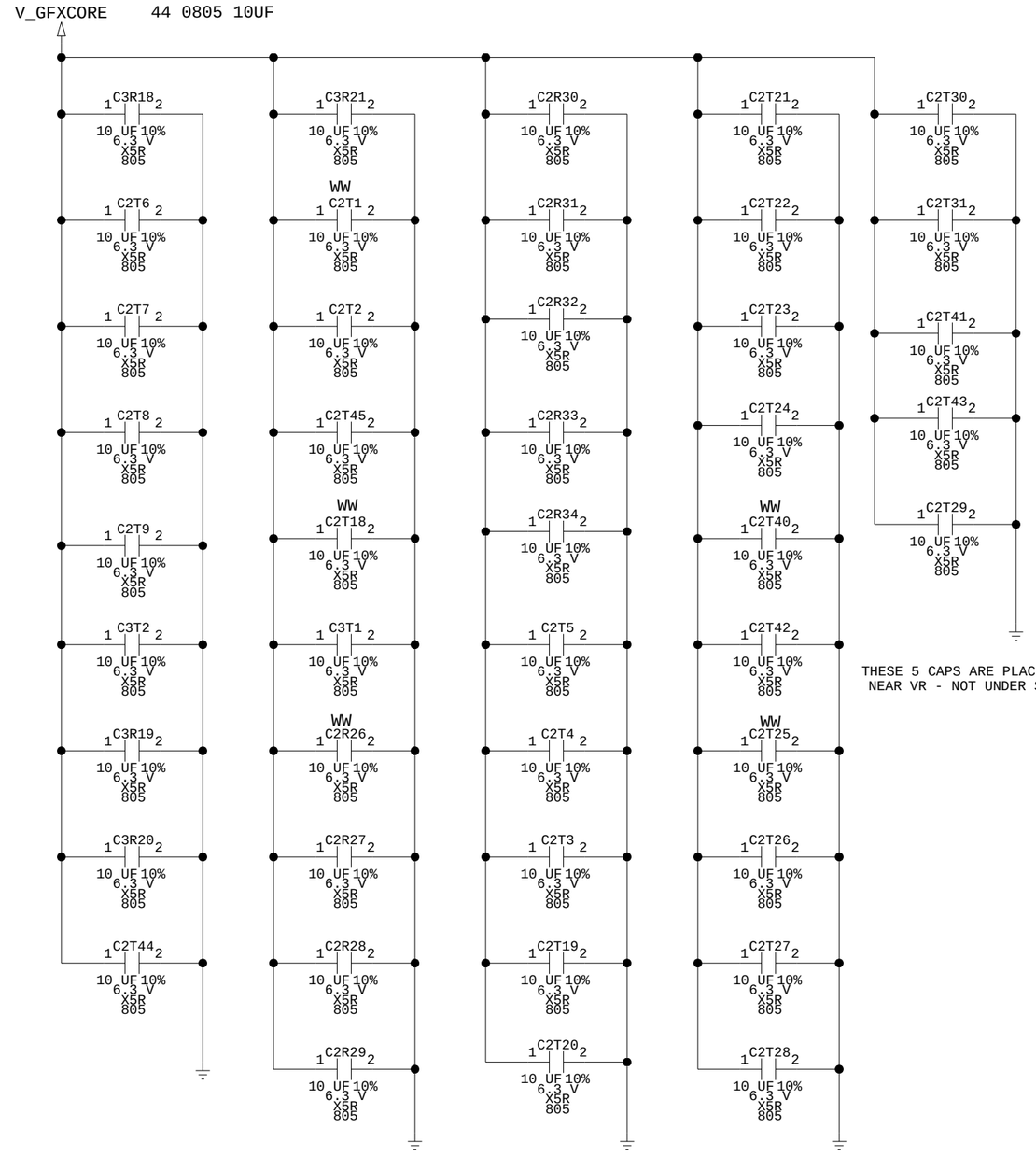
U7E1 IC
JTAG/DEBUG
4 of 17

X887732-001 BGA1443

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 8/86 | 8/86 | M | 1.0 |

# SOC: DECOUPLING

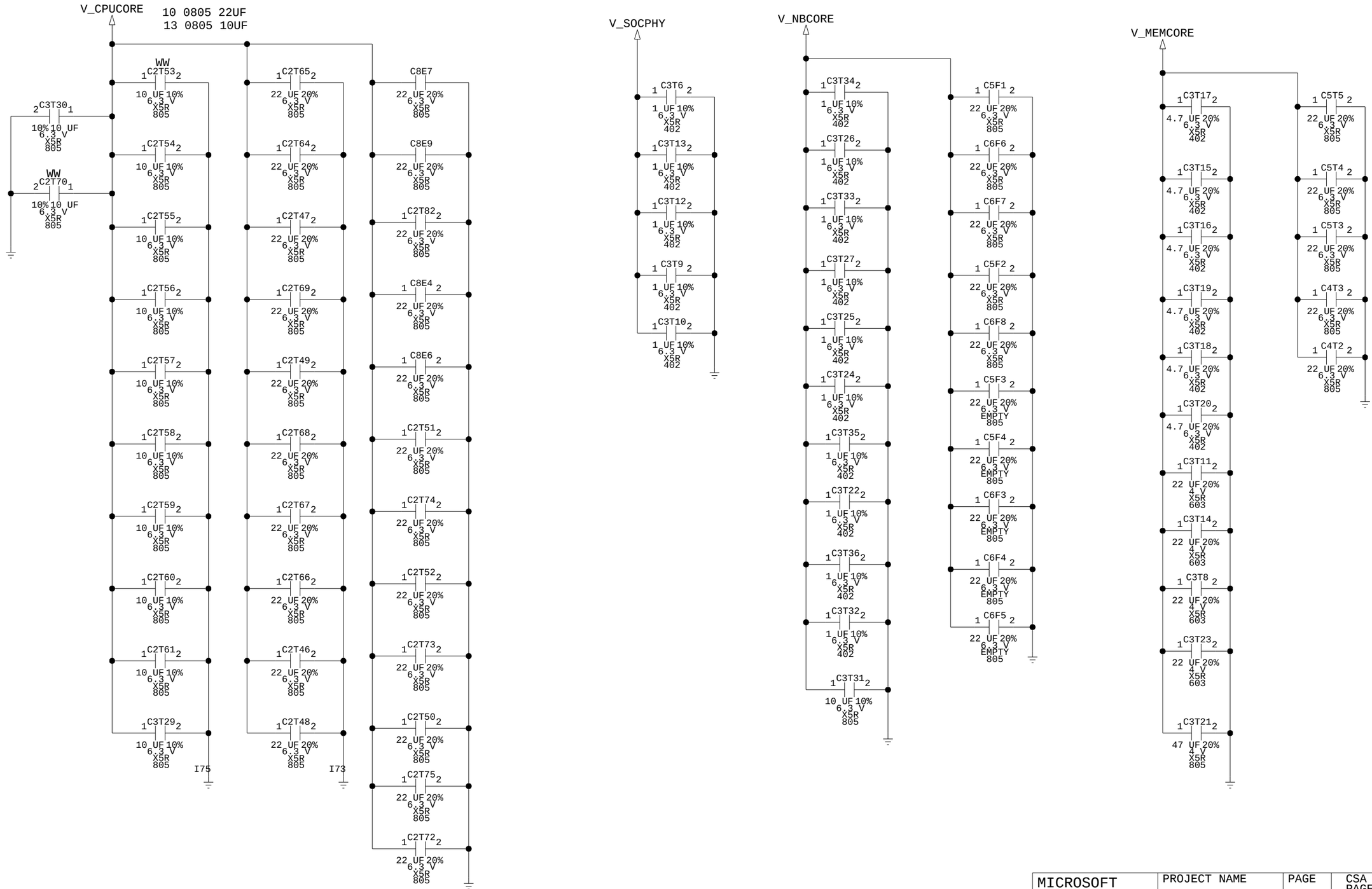



THESE 5 CAPS ARE PLACED NEAR VR - NOT UNDER SOC

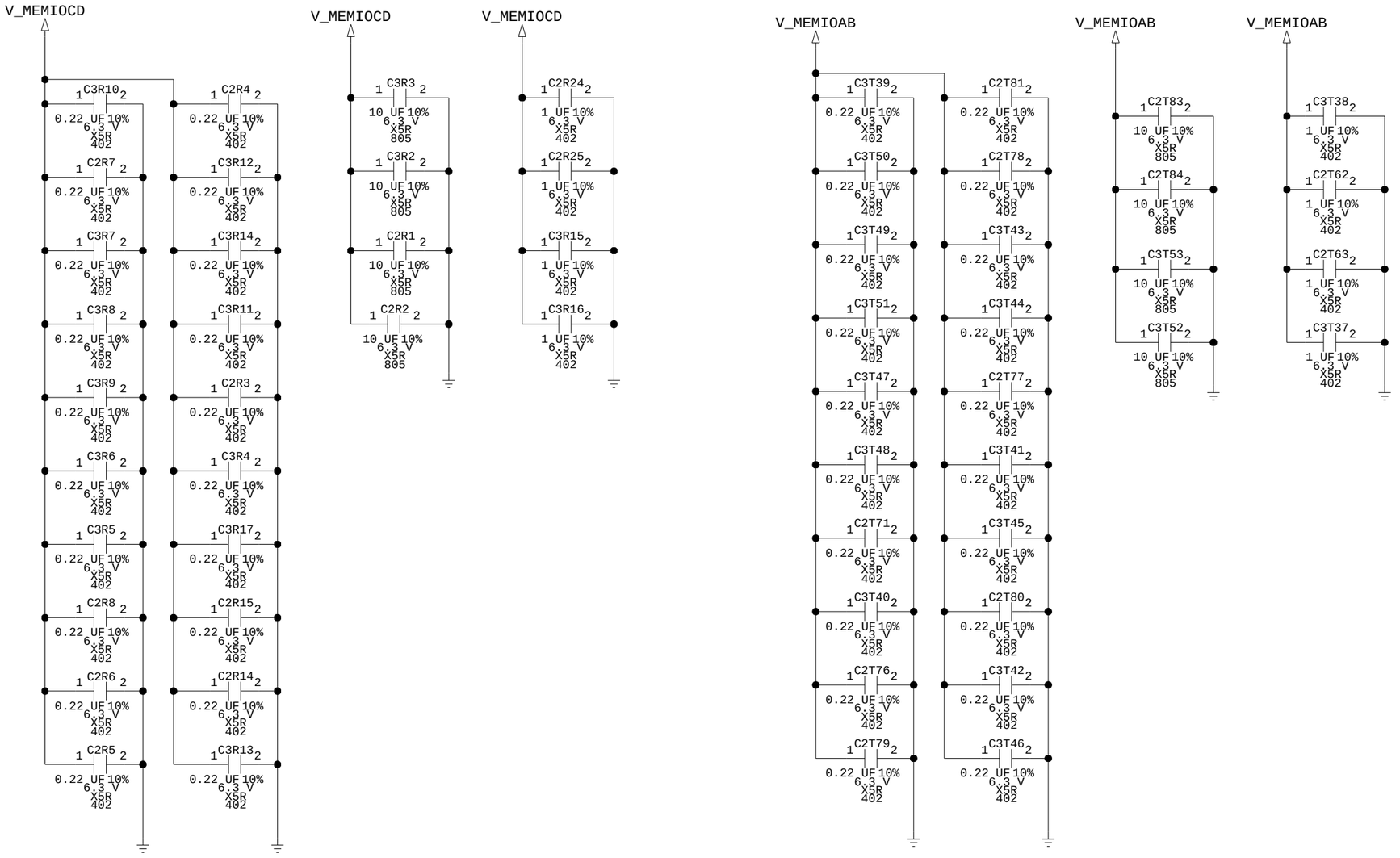
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 9/86 | 9/86 | M | 1.0 |

# SOC: DECOUPLING




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 10/86 | 10/86 | M | 1.0 |

# SOC: DECOUPLING

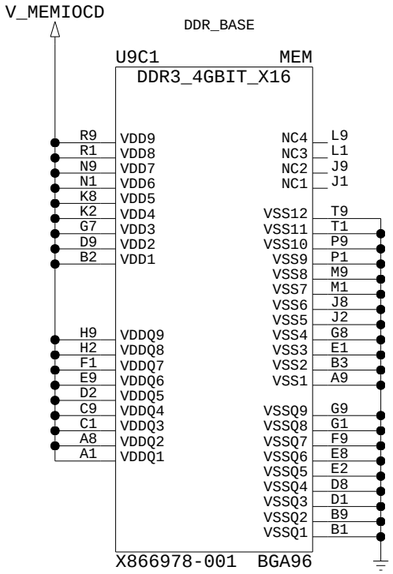


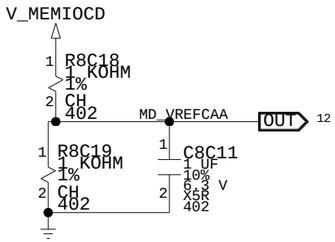

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 11/86 | 11/86 | M | 1.0 |

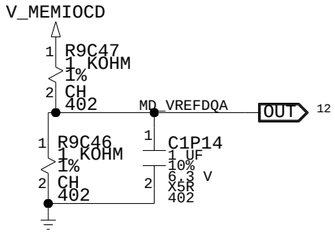
# MEMORY: CHANNEL D

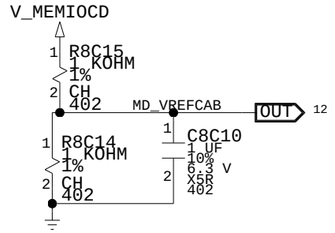
BYTE LANE 0
BYTE LANE 1

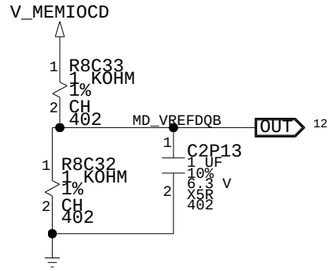
BYTE LANE 2
BYTE LANE 3

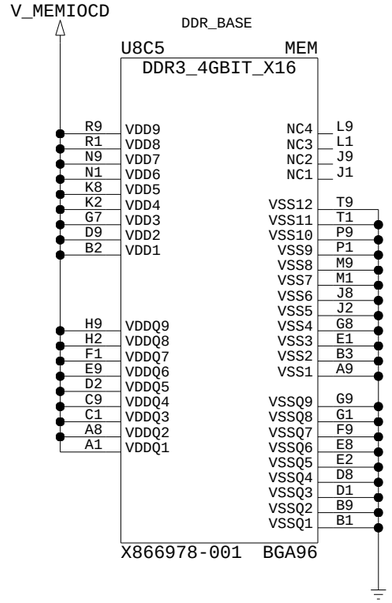


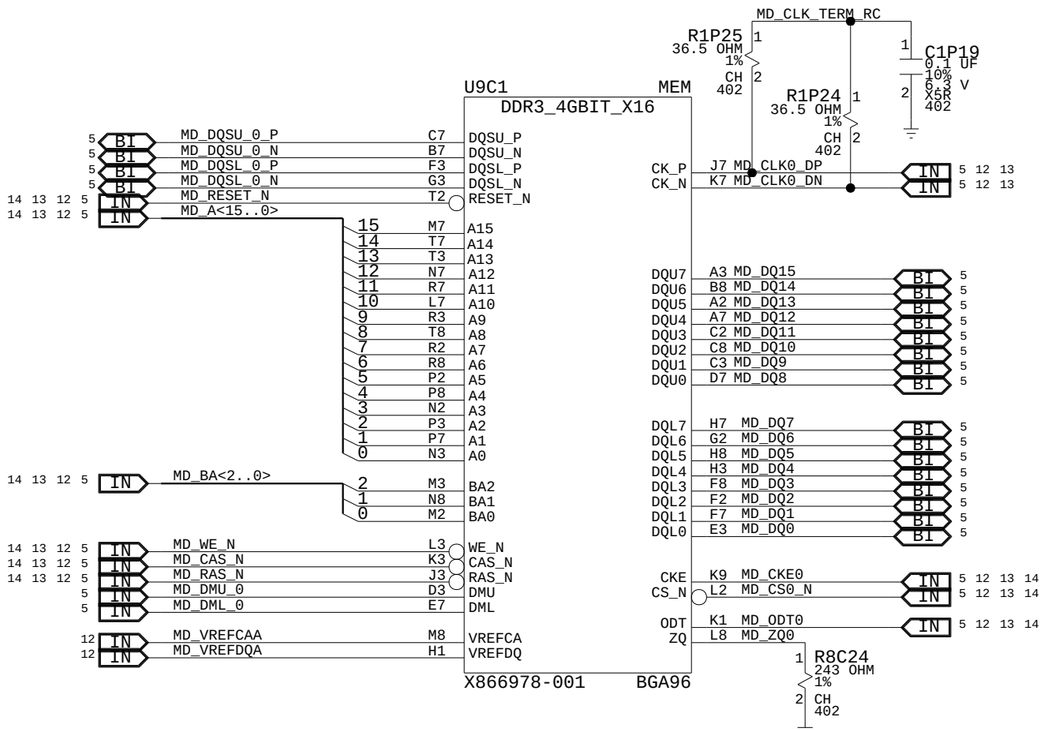



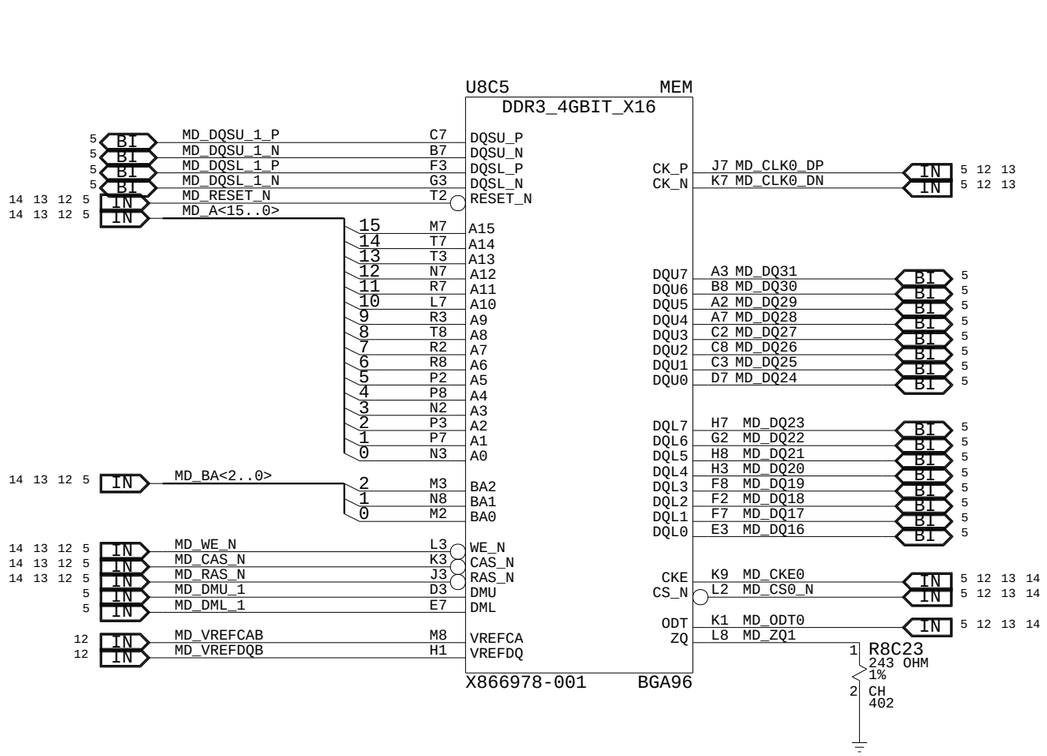



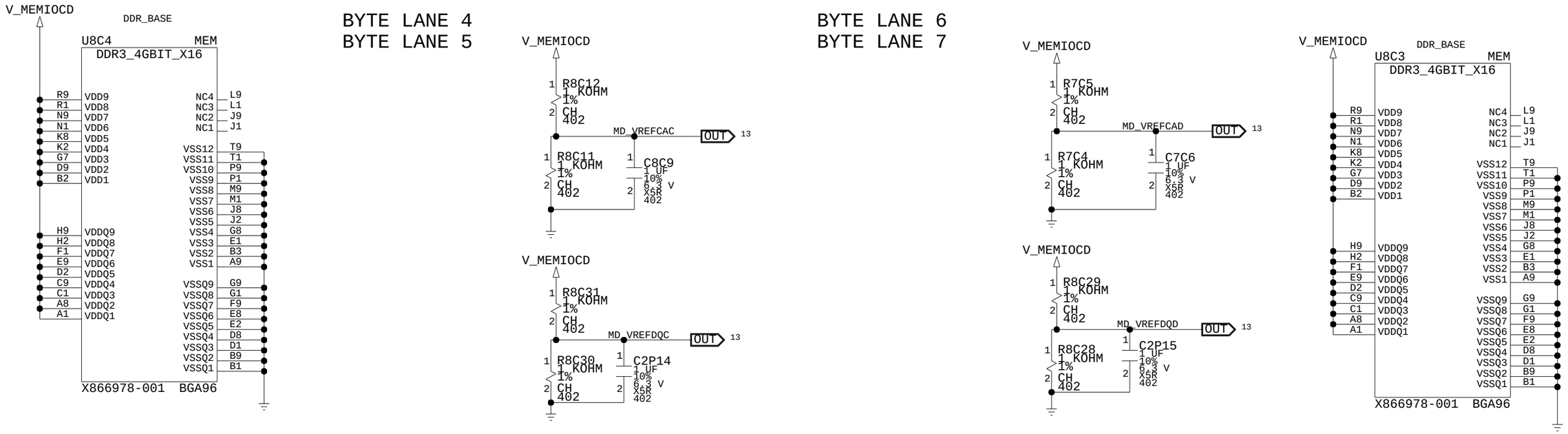




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 12/86 | 12/86 | M | 1.0 |

# MEMORY: CHANNEL D

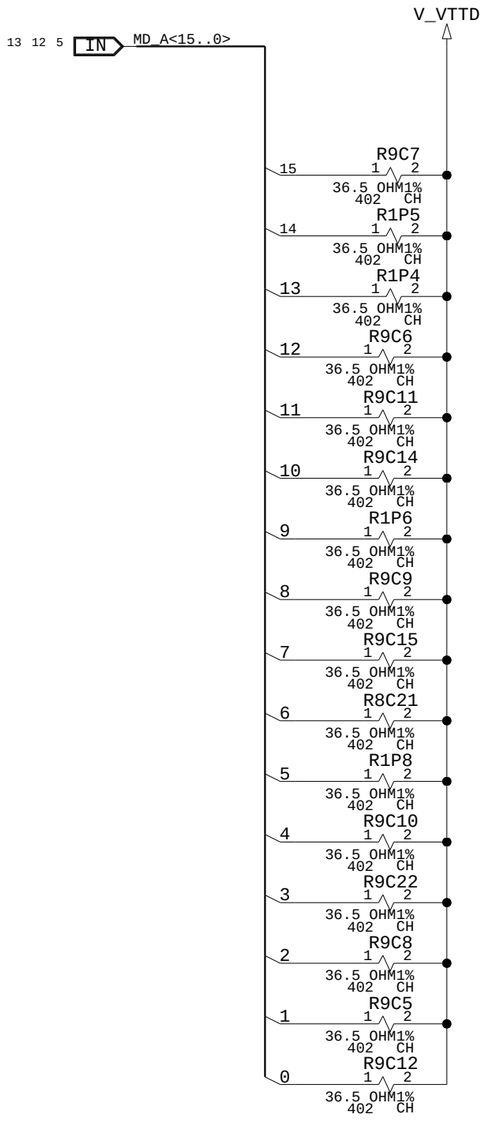
BYTE LANE 4
BYTE LANE 5

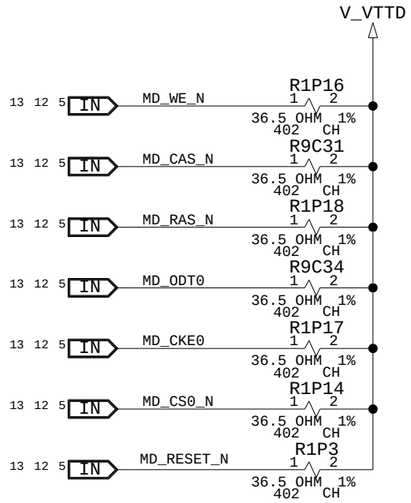
BYTE LANE 6
BYTE LANE 7

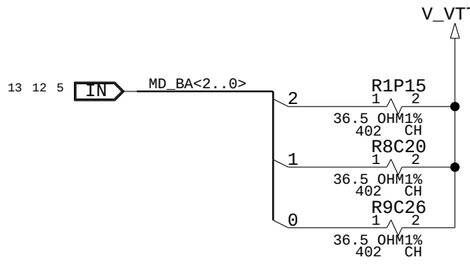


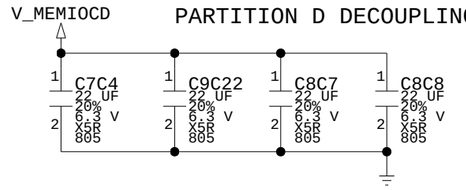

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 13/86 | 13/86 | M | 1.0 |

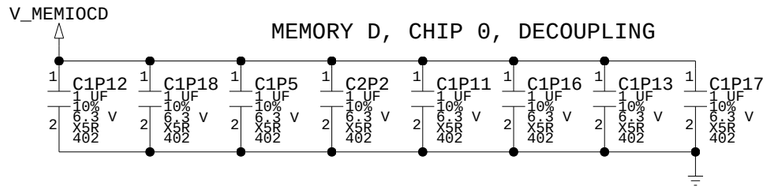
# MEMORY: CHANNEL D,DECOUPLING & TERMINATION

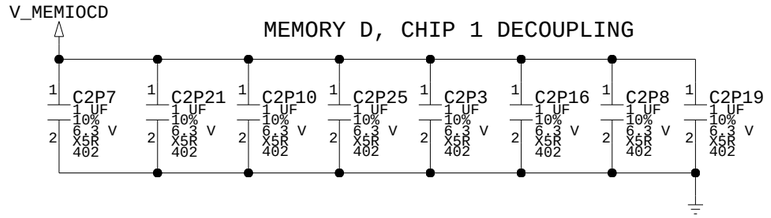


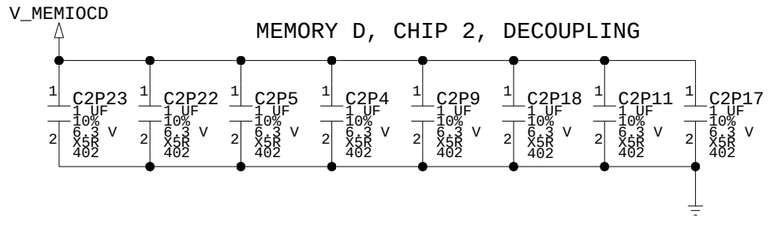



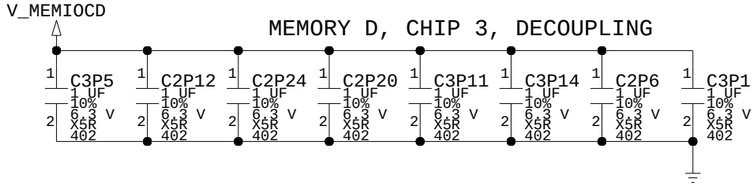



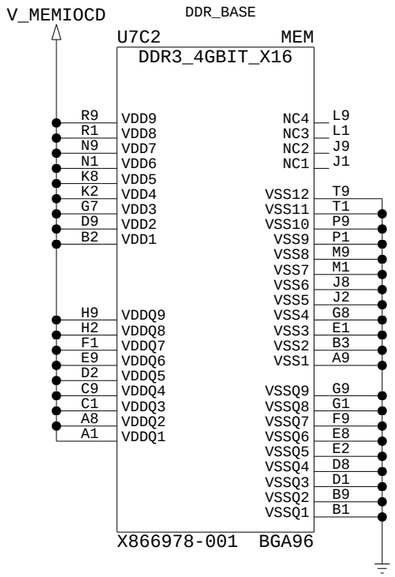



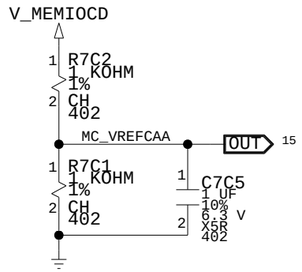

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X858982-001 | IC | U9C1,U8C5,U8C4,U8C3,U7C2,U7C1,U6D2,U6D3 | MEM,DDR3,FBGA96,H5TQ4G63AFR-TECR | DDR_HYNIX |
| X858982-001 | IC | U9F5,U8F3,U8F2,U8F1,U7F2,U7F1,U6E5,U6E3 | MEM,DDR3,FBGA96,H5TQ4G63AFR-TECR | DDR_HYNIX |
| X866978-001 | IC | U9C1,U8C5,U8C4,U8C3,U7C2,U7C1,U6D2,U6D3 | MEM,DDR3,FBGA96,MT41J256M16HA-093 | DDR_MICRON |
| X866978-001 | IC | U9F5,U8F3,U8F2,U8F1,U7F2,U7F1,U6E5,U6E3 | MEM,DDR3,FBGA96,MT41J256M16HA-093 | DDR_MICRON |
| X888481-001 | IC | U9C1,U8C5,U8C4,U8C3,U7C2,U7C1,U6D2,U6D3 | MEM,DDR3,FBGA96,K4W4G1646D-BC1A00 | DDR_SAMSUNG |
| X888481-001 | IC | U9F5,U8F3,U8F2,U8F1,U7F2,U7F1,U6E5,U6E3 | MEM,DDR3,FBGA96,K4W4G1646D-BC1A00 | DDR_SAMSUNG |

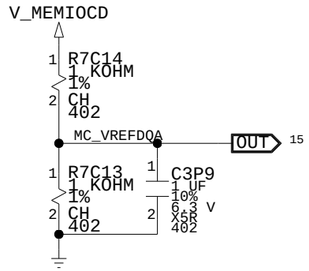
| | | | | | |
|---|---|---|---|---|---|
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
| | Silverton_Retail | 14/86 | 14/86 | M | 1.0 |

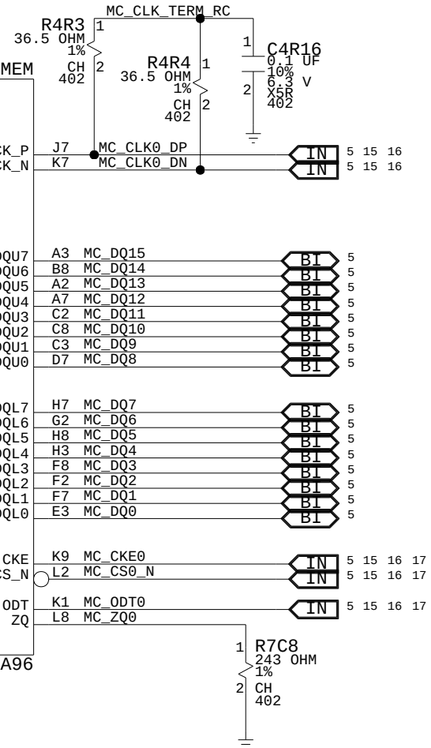
# MEMORY: CHANNEL C

BYTE LANE 0
BYTE LANE 1

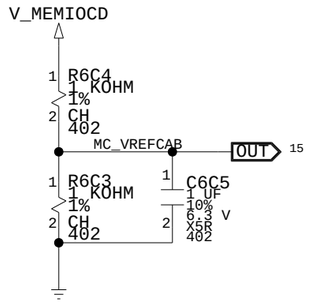


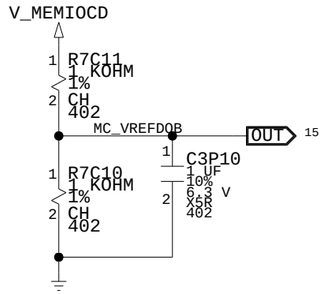



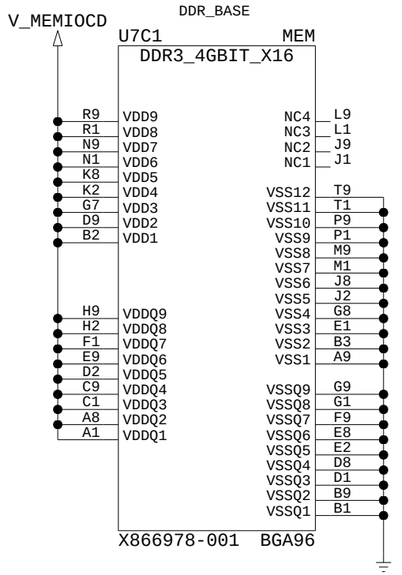



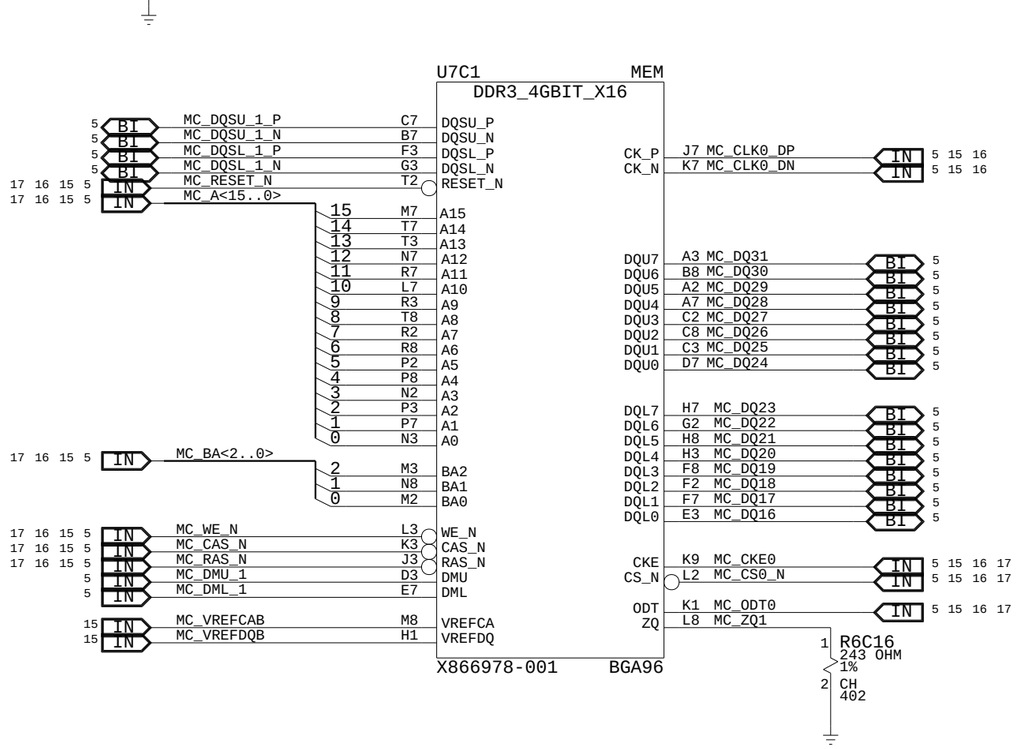




BYTE LANE 2
BYTE LANE 3



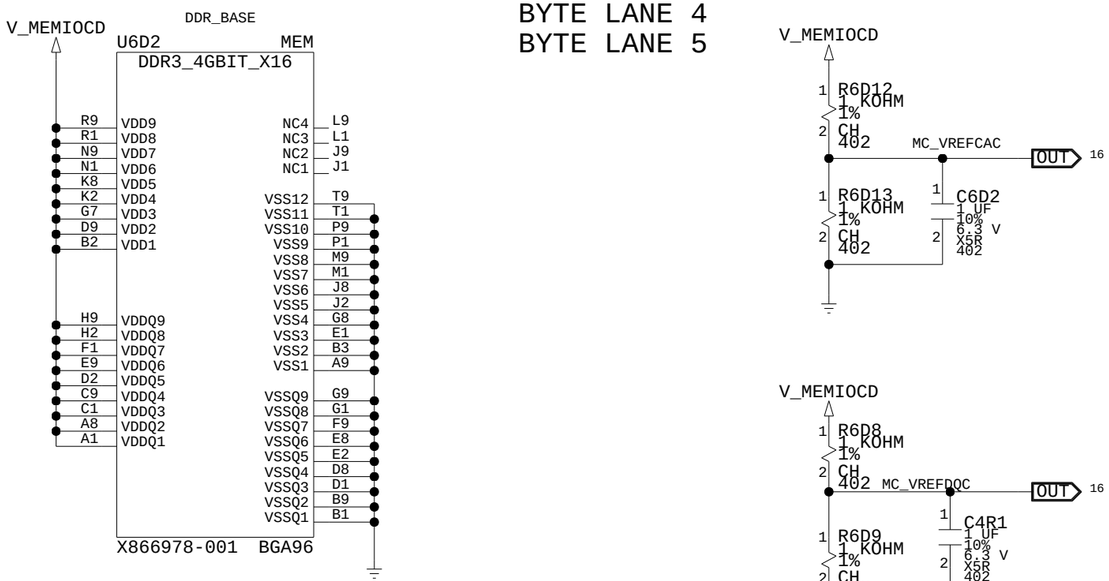



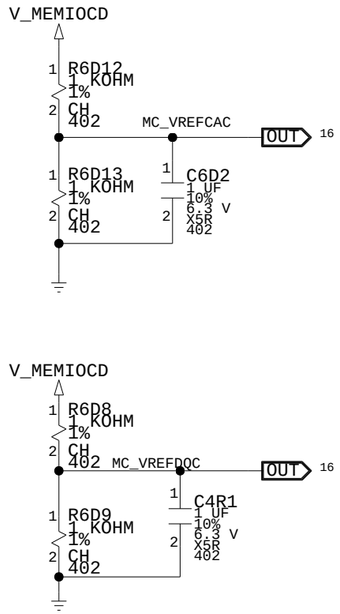

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 15/86 | 15/86 | M | 1.0 |

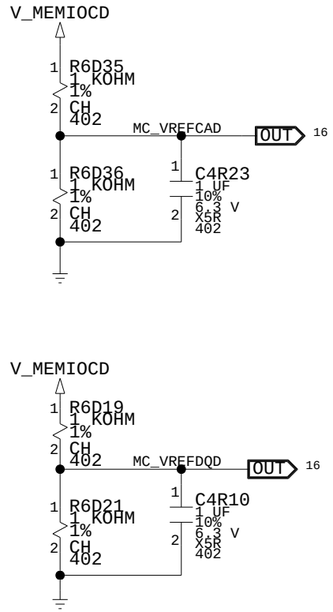
# MEMORY: CHANNEL C

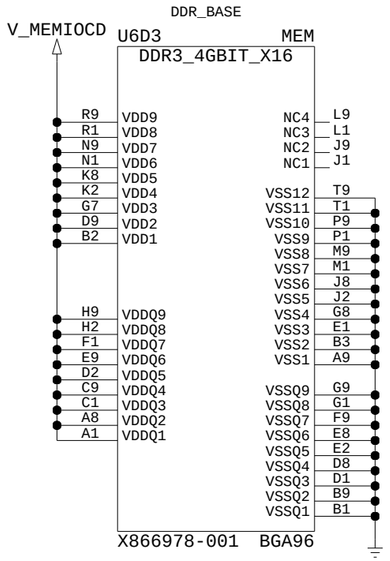
BYTE LANE 4
BYTE LANE 5

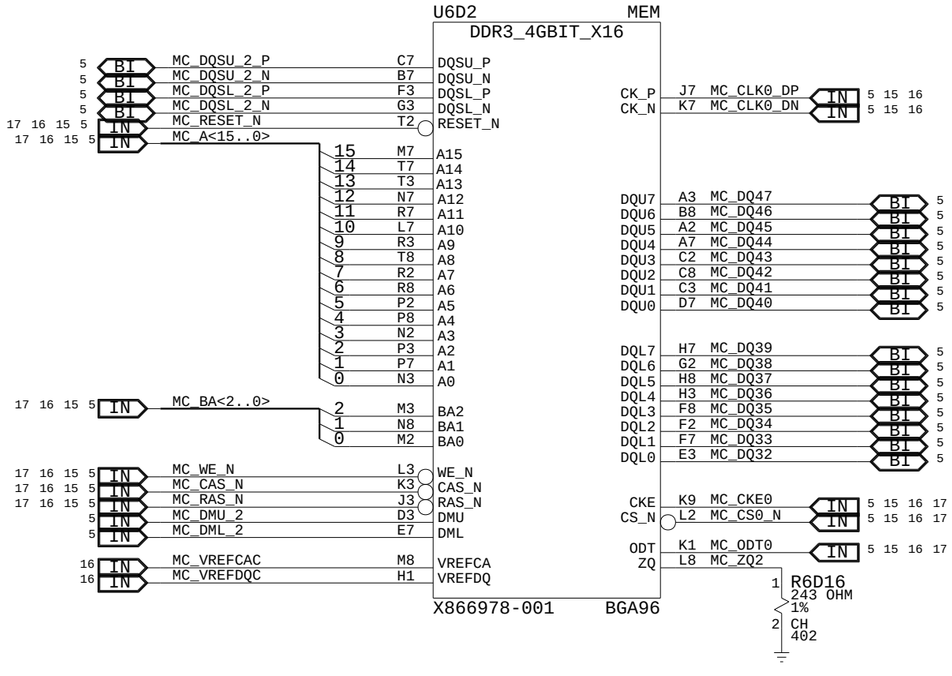
BYTE LANE 6
BYTE LANE 7

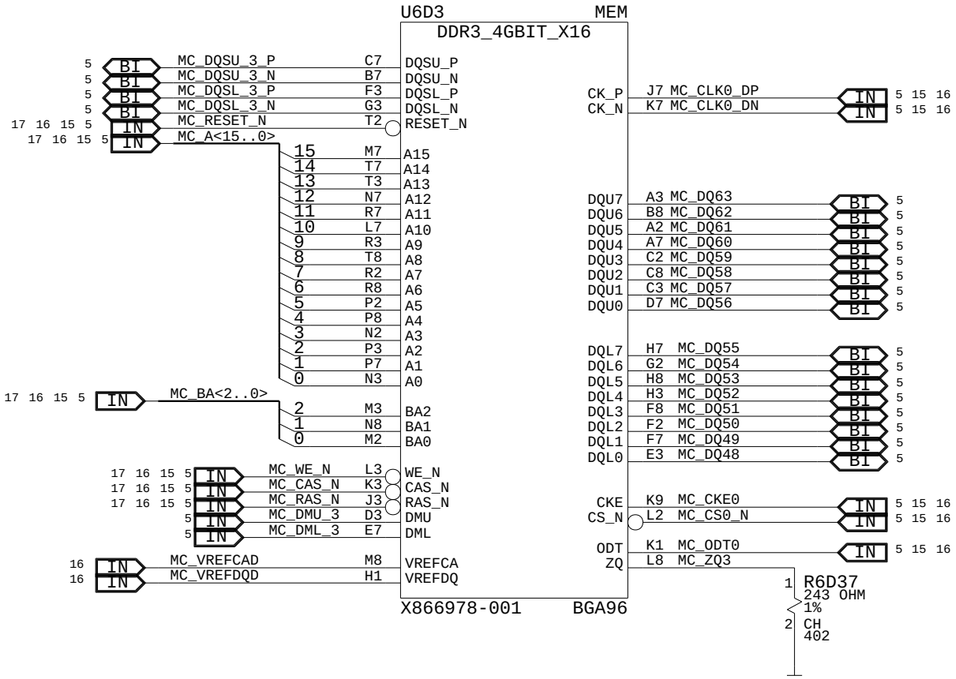


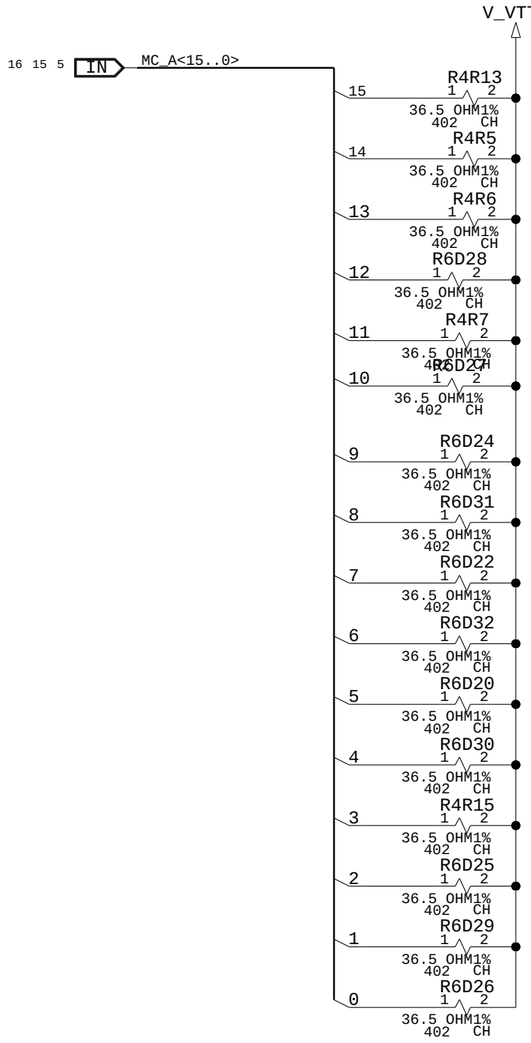



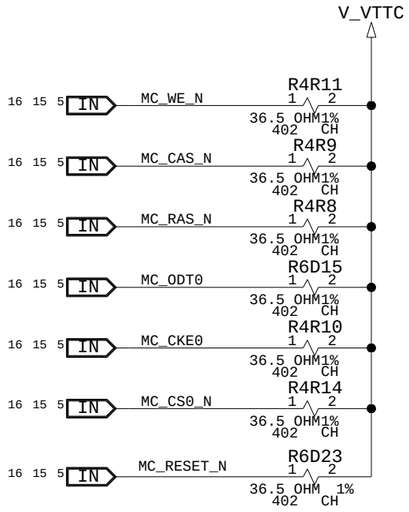



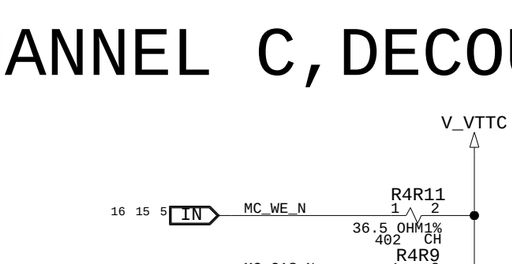



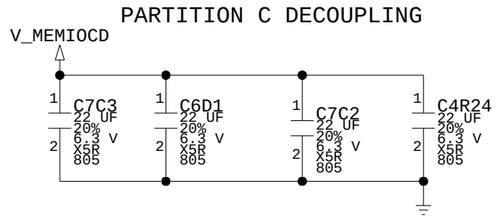

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 16/86 | 16/86 | M | 1.0 |

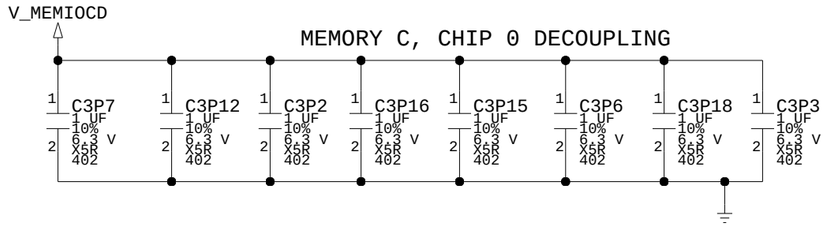
# MEMORY: CHANNEL C,DECOUPLING & TERMINATION

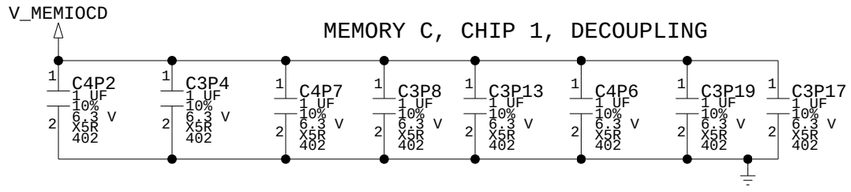


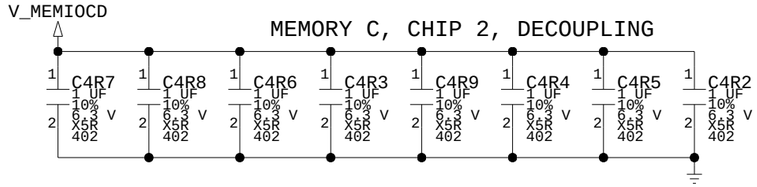



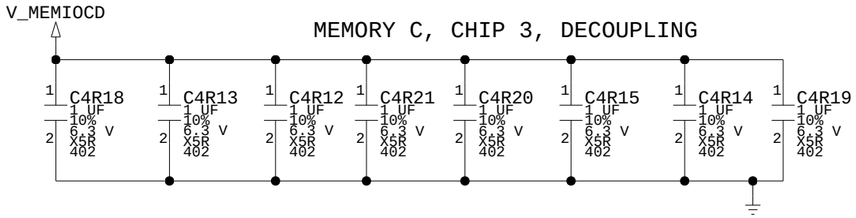



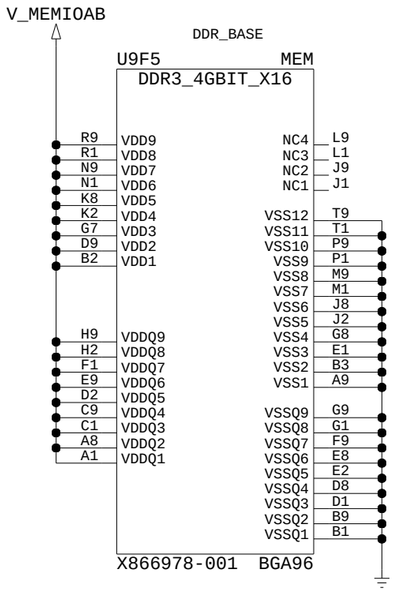



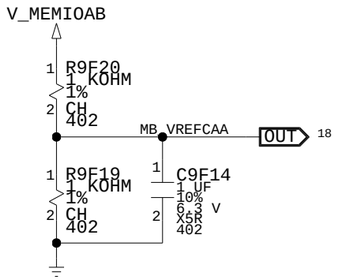

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 17/86 | 17/86 | M | 1.0 |

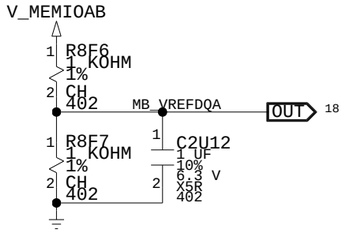
# MEMORY: CHANNEL B

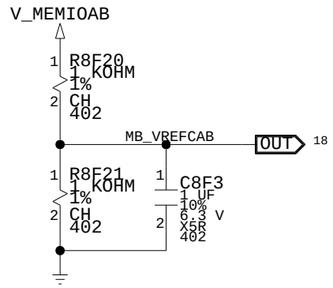
BYTE LANE 0
BYTE LANE 1

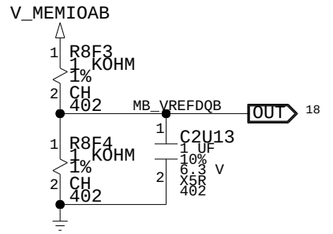
BYTE LANE 2
BYTE LANE 3

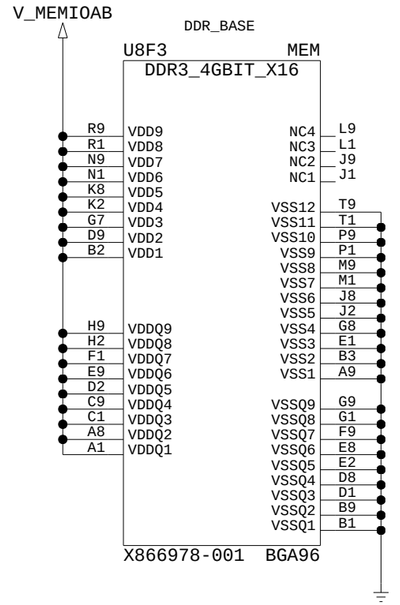


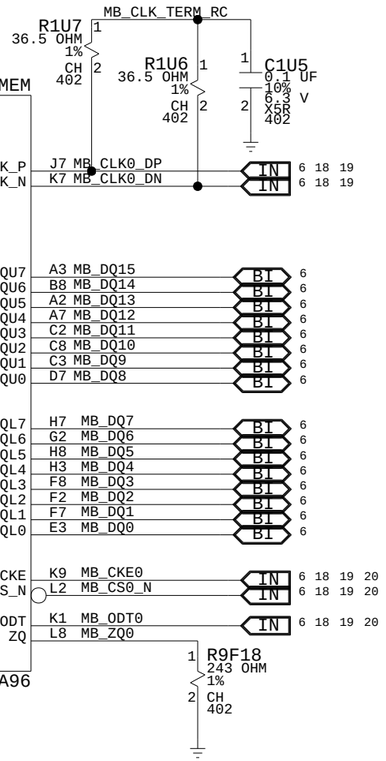



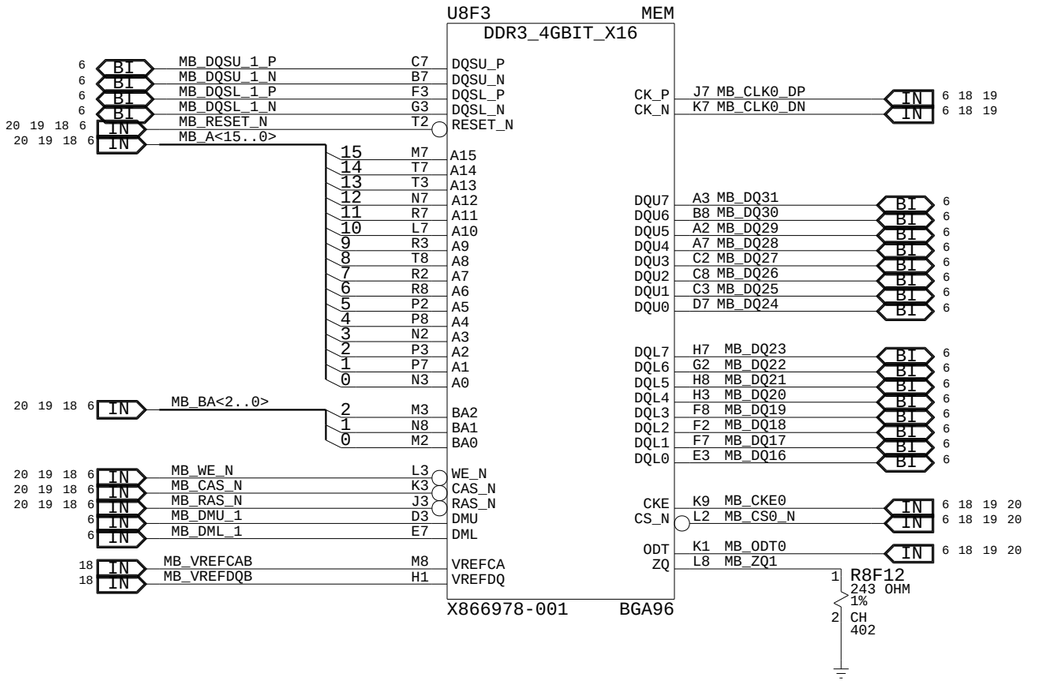



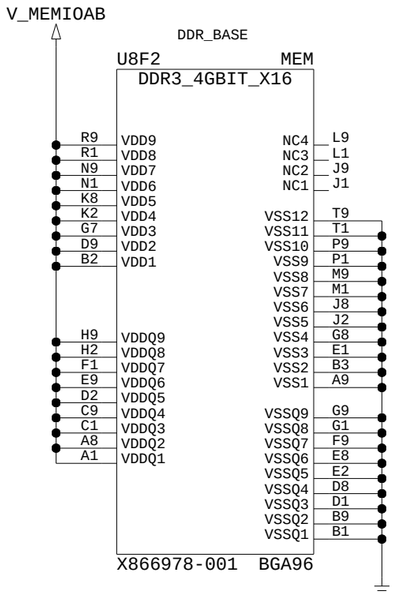



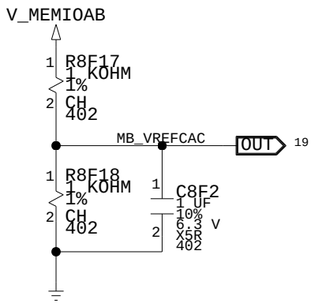

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 18/86 | 18/86 | M | 1.0 |

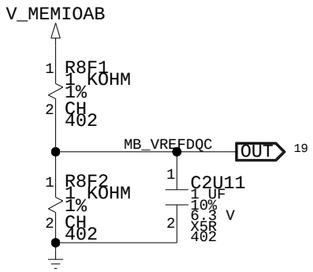
# MEMORY: CHANNEL B

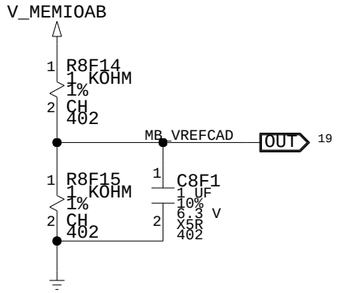
BYTE LANE 4
BYTE LANE 5

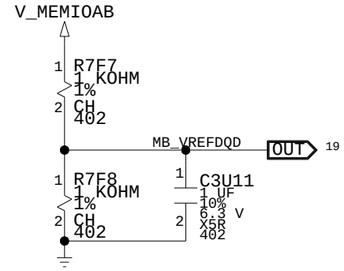
BYTE LANE 6
BYTE LANE 7

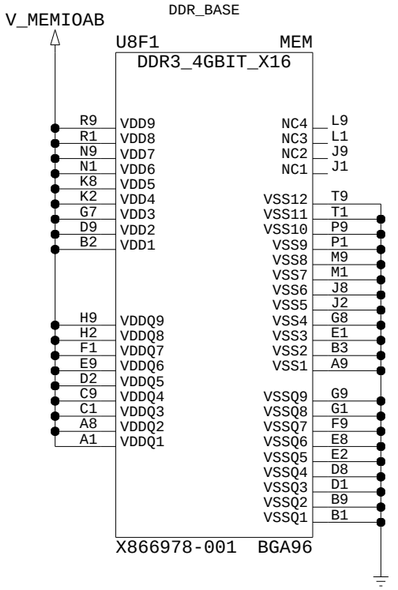


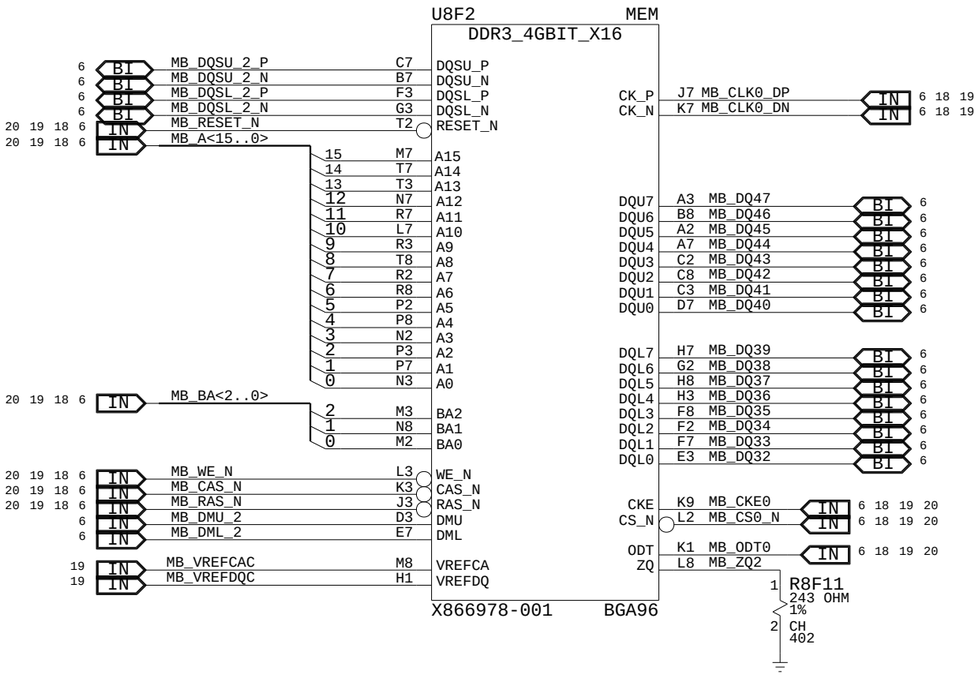



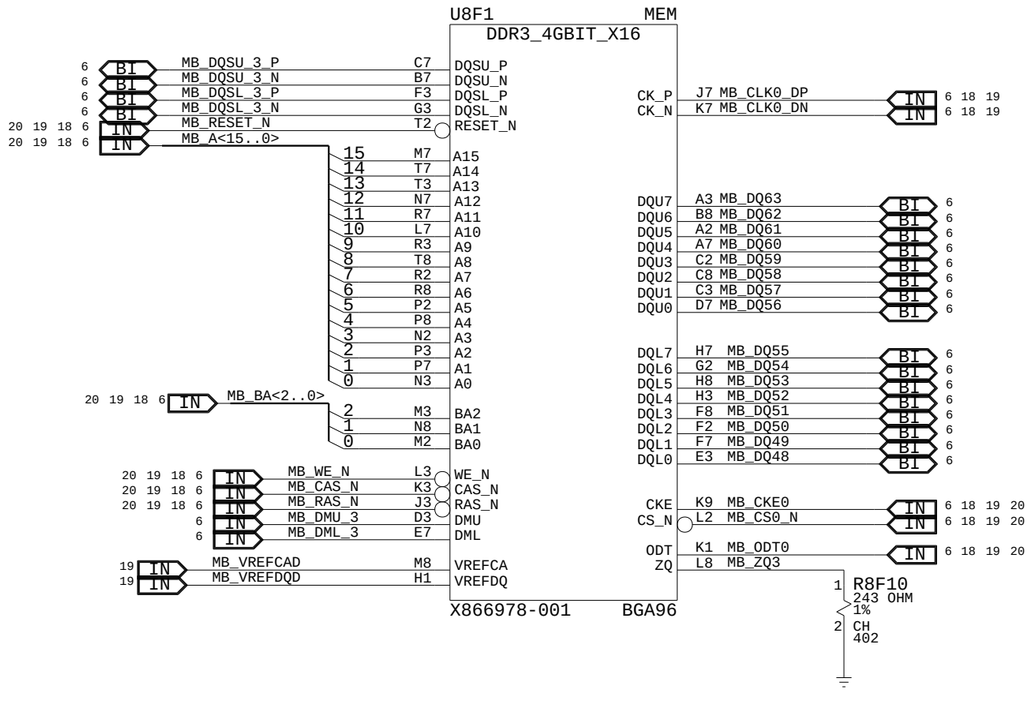



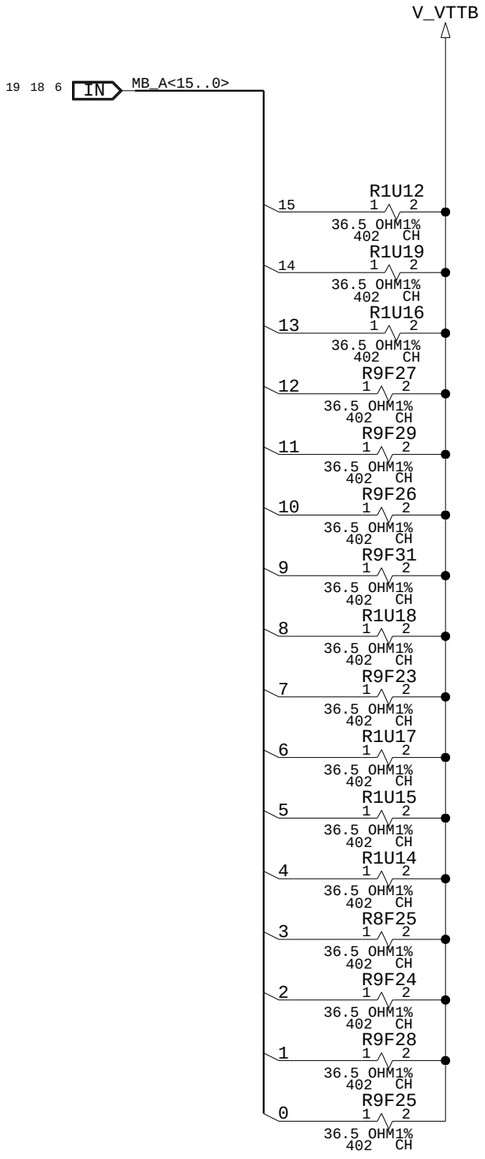



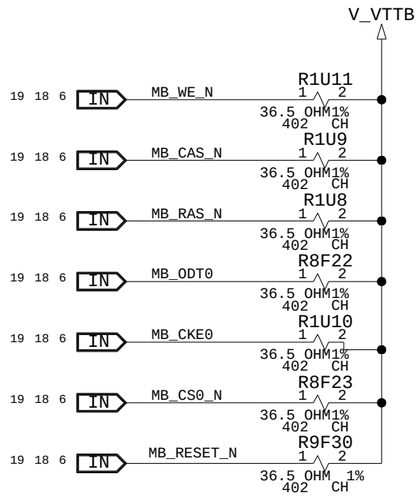




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 19/86 | 19/86 | M | 1.0 |

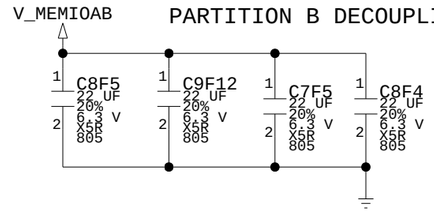
# MEMORY: CHANNEL B,DECOUPLING & TERMINATION

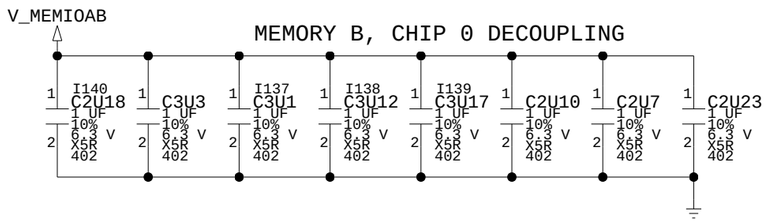


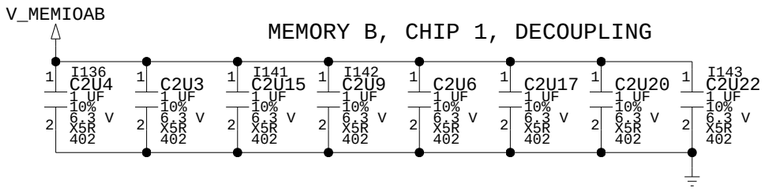



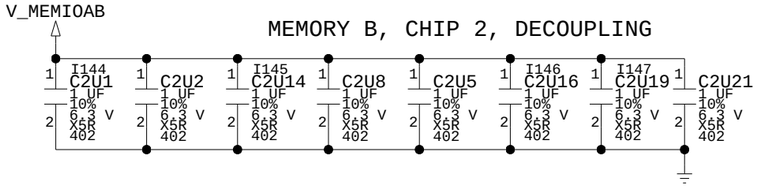


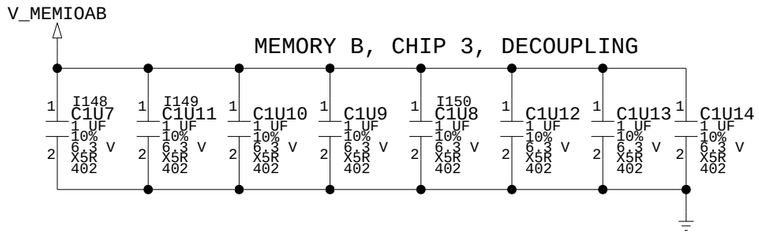




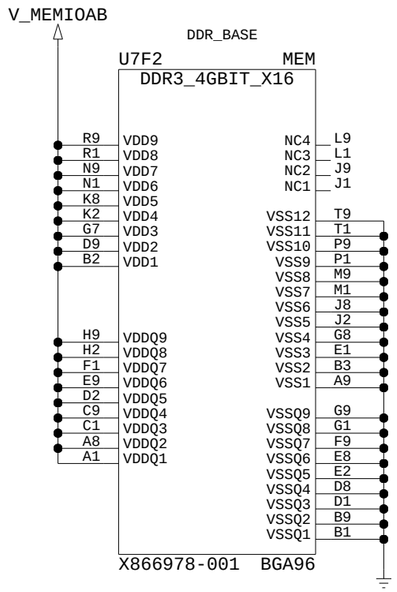



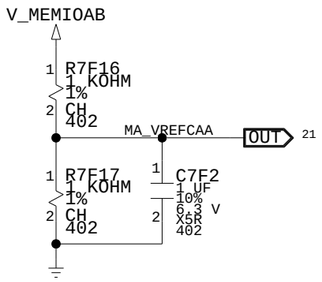

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 20/86 | 20/86 | M | 1.0 |

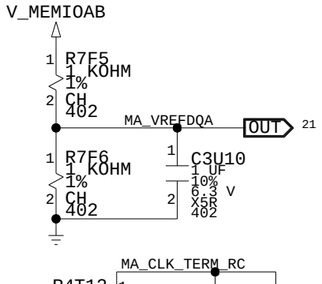
# MEMORY: CHANNEL A

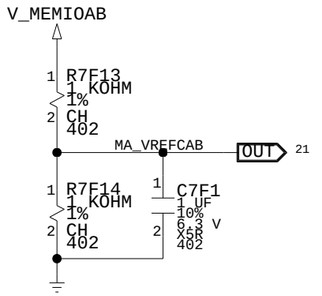
BYTE LANE 0
BYTE LANE 1

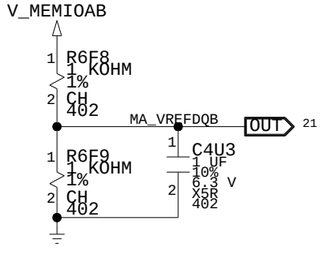
BYTE LANE 2
BYTE LANE 3



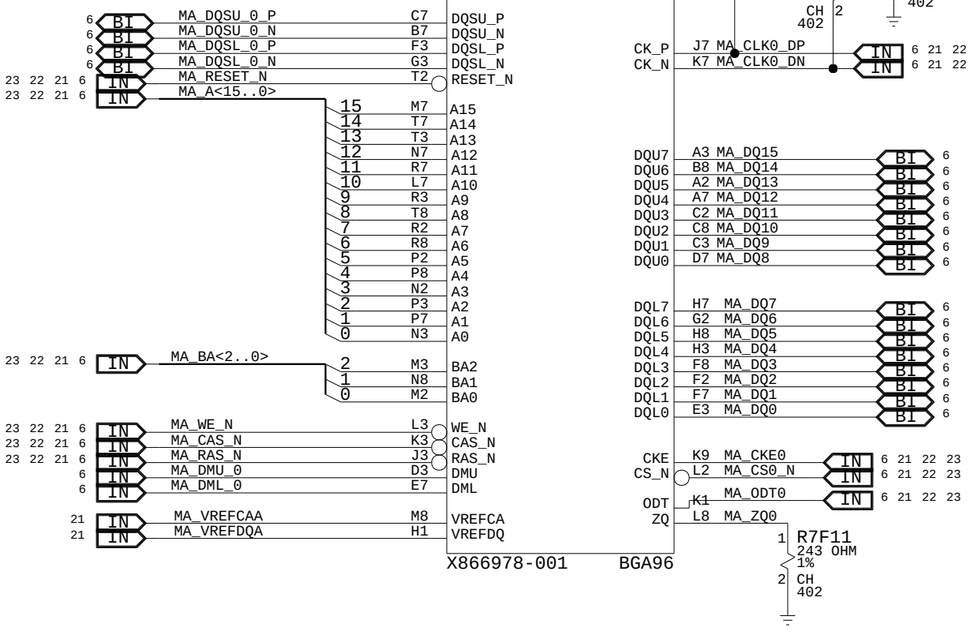



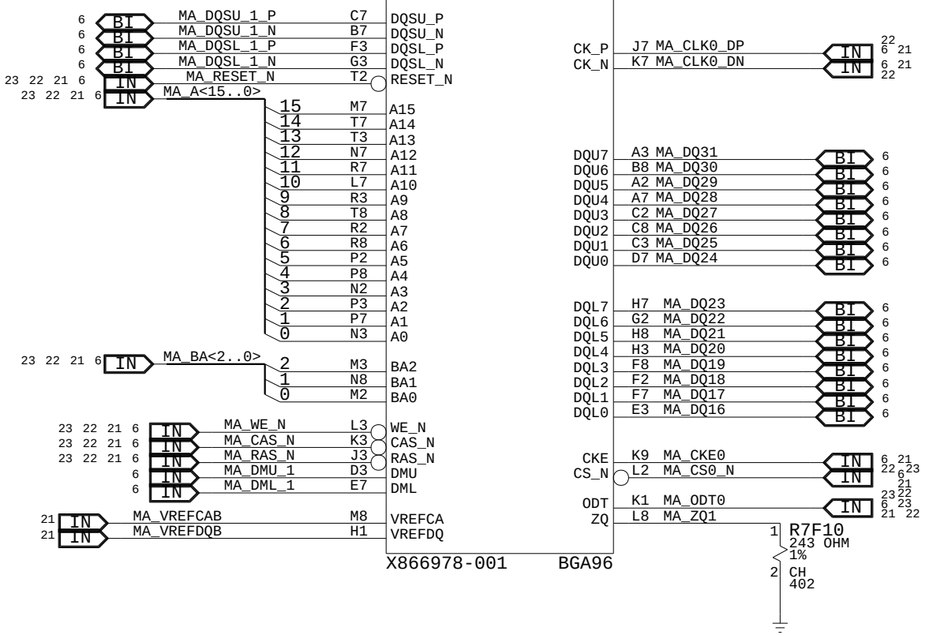









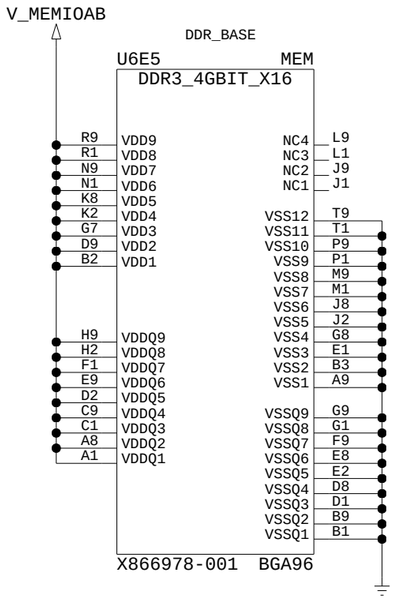



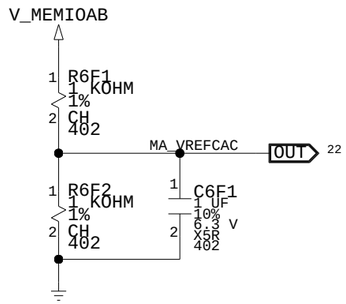

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 21/86 | 21/86 | M | 1.0 |

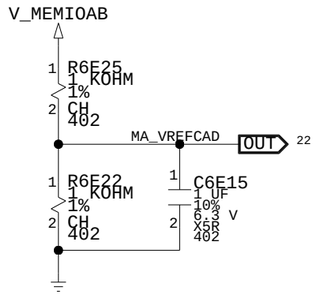
# MEMORY: CHANNEL A

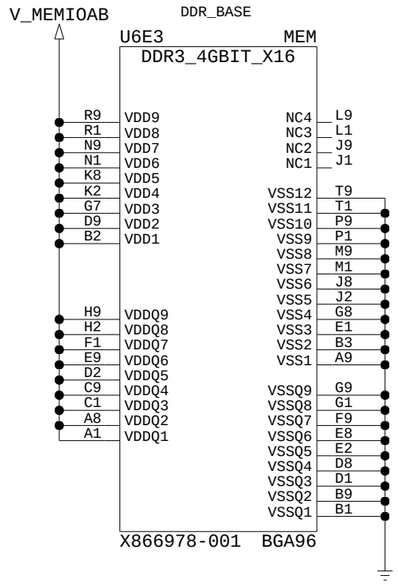
BYTE LANE 4
BYTE LANE 5

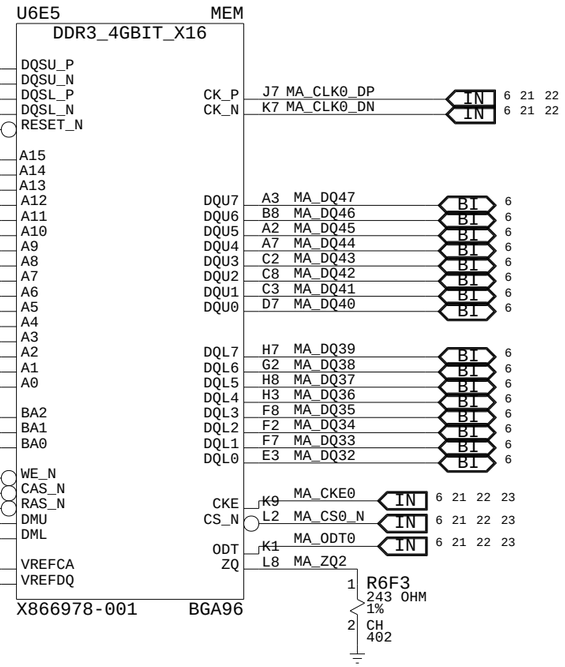
BYTE LANE 6
BYTE LANE 7

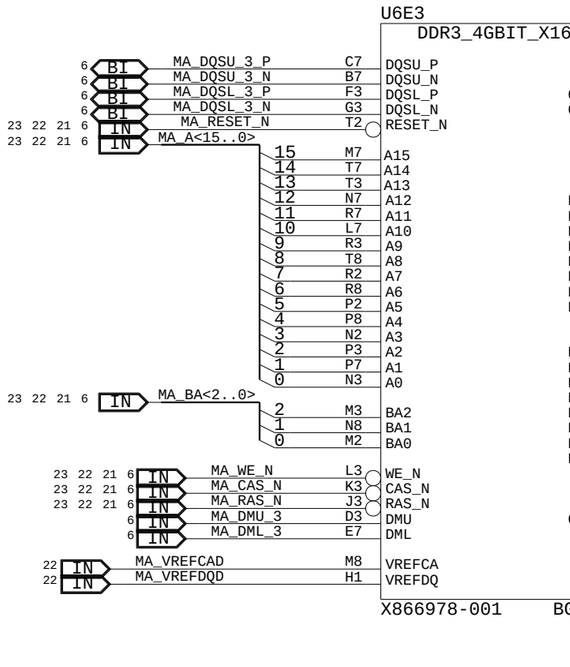


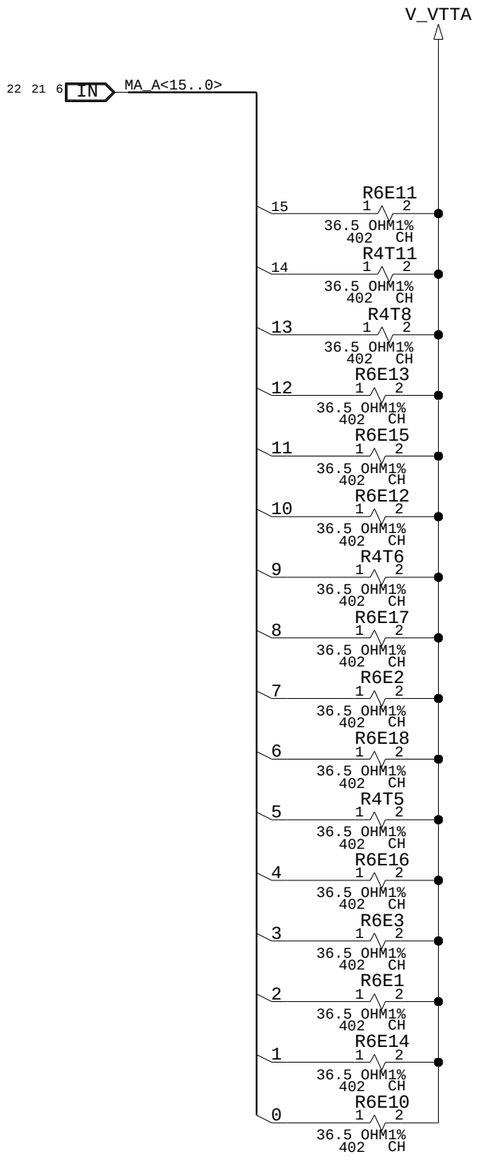



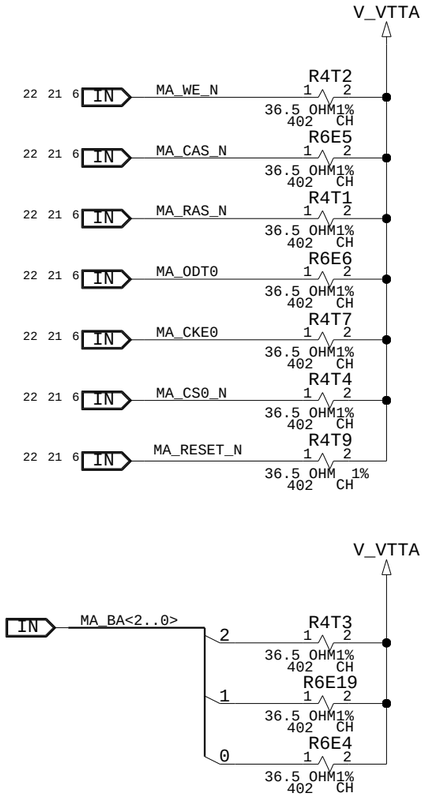



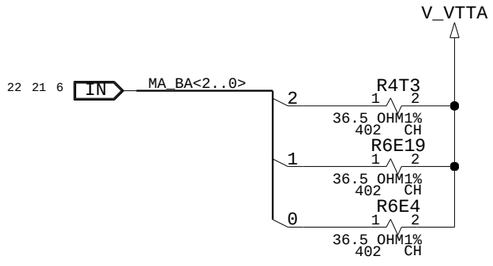




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 22/86 | 22/86 | M | 1.0 |

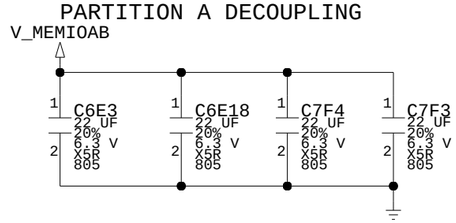
# MEMORY: CHANNEL A,DECOUPLING & TERMINATION



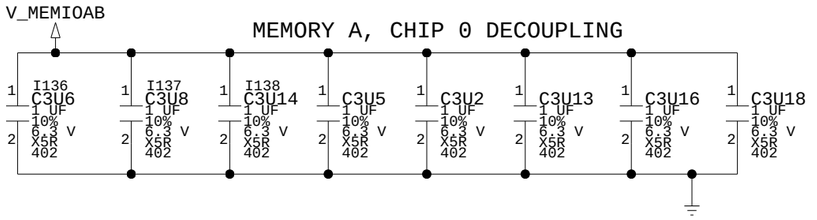



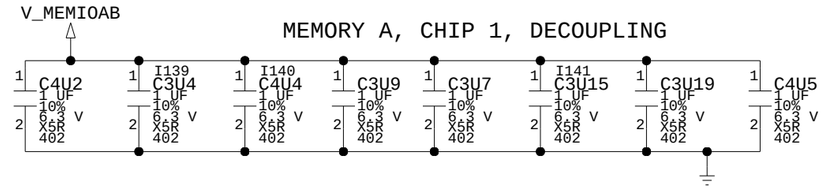

PARTITION A DECOUPLING



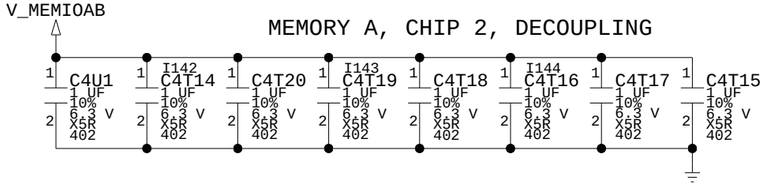

MEMORY A, CHIP 0 DECOUPLING



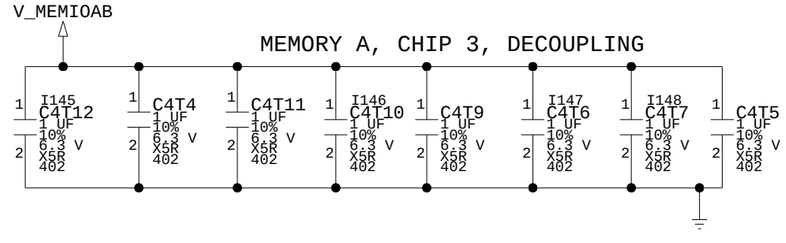

MEMORY A, CHIP 1, DECOUPLING




MEMORY A, CHIP 2, DECOUPLING




MEMORY A, CHIP 3, DECOUPLING




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 23/86 | 23/86 | M | 1.0 |

# KIC: USB

U4D2 KIC IC

6 of 11 I84

| | | | | | | |
|---|---|---|---|---|---|---|
| 36 IN | USB3_AUX_RP | Y1 | USBC_D1_RXP | USBC_D1_TXP | W3 | USB3_AUX_TP_C |
| 36 IN | USB3_AUX_RN | Y2 | USBC_D1_RXN | USBC_D1_TXN | W4 | USB3_AUX_TN_C |
| 35 IN | USB3_BP_P1_RP | V1 | USBB_D2_RXP | USBB_D2_TXP | U3 | USB3_BP_P1_TP_C |
| 35 IN | USB3_BP_P1_RN | V2 | USBB_D2_RXN | USBB_D2_TXN | U4 | USB3_BP_P1_TN_C |
| 35 IN | USB3_BP_P0_RP | T1 | USBB_D3_RXP | USBB_D3_TXP | R3 | USB3_BP_P0_TP_C |
| 35 IN | USB3_BP_P0_RN | T2 | USBB_D3_RXN | USBB_D3_TXN | R4 | USB3_BP_P0_TN_C |
| 35 IN | USB3_FP_P0_RP | AA8 | USBA_D2_RXP | USBA_D2_TXP | AB10 | USB3_FP_P0_TP_C |
| 35 IN | USB3_FP_P0_RN | AA7 | USBA_D2_RXN | USBA_D2_TXN | AB9 | USB3_FP_P0_TN_C |
| DB4B6 1 | USB3_TP_P1_RP | AB1 | USBA_D3_RXP | USBA_D3_TXP | AA3 | USB3_TP_P1_TP_C |
| DB4B5 1 | USB3_TP_P1_RN | AB2 | USBA_D3_RXN | USBA_D3_TXN | AA4 | USB3_TP_P1_TN_C |
| | USBA_D1_TXRTUNE | AB11 | USBA_D1_TXRTUNE | | | |

R6R1 174 OHM 1% CH 402

| | | | | |
|---|---|---|---|---|
| USBD_D0_DP | AF8 | USB2_WIFI_DP | BI | 36 |
| USBD_D0_DN | AE8 | USB2_WIFI_DN | BI | 36 |
| USBC_D0_DP | AC4 | USB2_AUX_DP | BI | 36 |
| USBC_D0_DN | AC3 | USB2_AUX_DN | BI | 36 |
| USBA_D0_DP | AC7 | USB2_FP_P0_DP | BI | 35 |
| USBA_D0_DN | AC8 | USB2_FP_P0_DN | BI | 35 |
| USBA_D1_DP | AF6 | USB2_ACC_DP | BI | 36 |
| USBA_D1_DN | AF5 | USB2_ACC_DN | BI | 36 |
| USBB_D0_DP | AE4 | USB2_BP_P1_DP | BI | 35 |
| USBB_D0_DN | AE3 | USB2_BP_P1_DN | BI | 35 |
| USBB_D1_DP | AD2 | USB2_BP_P0_DP | BI | 35 |
| USBB_D1_DN | AD1 | USB2_BP_P0_DN | BI | 35 |

| | | | | |
|---|---|---|---|---|
| USBC_D1_TXP | W3 | USB3_AUX_TP | OUT | 36 |
| USBC_D1_TXN | W4 | USB3_AUX_TN | OUT | 36 |
| USBB_D2_TXP | U3 | USB3_BP_P1_TP | OUT | 35 |
| USBB_D2_TXN | U4 | USB3_BP_P1_TN | OUT | 35 |
| USBB_D3_TXP | R3 | USB3_BP_P0_TP | OUT | 35 |
| USBB_D3_TXN | R4 | USB3_BP_P0_TN | OUT | 35 |
| USBA_D2_TXP | AB10 | USB3_FP_P0_TP | OUT | 35 |
| USBA_D2_TXN | AB9 | USB3_FP_P0_TN | OUT | 35 |
| USBA_D3_TXP | AA3 | USB3_TP_P1_TP 1 | DB4B8 | |
| USBA_D3_TXN | AA4 | USB3_TP_P1_TN 1 | DB4B7 | |

| | | | |
|---|---|---|---|
| USBA_D2_AMOUT | AA5 | USBA_D2_AMOUNT 1 | DB6P3 |
| USBA_D1_AMOUT | AE6 | USBA_D1_AMOUNT 1 | DB4C11 |
| USBA_D0_AMOUT | AC11 | USBA_D0_AMOUNT 1 | DB4D6 |
| USBB_D2_AMOUT | R5 | USBB_D2_AMOUNT 1 | DB6P1 |
| USBB_D1_AMOUT | AD5 | USBB_D1_AMOUNT 1 | DB4C19 |
| USBB_D0_AMOUT | AF4 | USBB_D0_AMOUNT 1 | DB4D1 |
| USBC_D1_AMOUT | W5 | USBC_D1_AMOUNT 1 | DB6P2 |
| USBC_D0_AMOUT | AC5 | USBC_D0_AMOUNT 1 | DB6P4 |
| USBD_D0_AMOUT | AE9 | USBD_D0_AMOUNT 1 | DB3D4 |

C6B7 1 2 0.1 UF 10% 6.3 V X5R 402

C6B6 1 2 0.1 UF 10% 6.3 V X5R 402

C7B6 1 2 0.1 UF 10% 6.3 V X5R 402

C7B5 1 2 0.1 UF 10% 6.3 V X5R 402

C7B8 1 2 0.1 UF 10% 6.3 V X5R 402

C7B7 1 2 0.1 UF 10% 6.3 V X5R 402

C3F9 1 2 0.1 UF 10% 6.3 V X5R 402

C3F10 1 2 0.1 UF 10% 6.3 V X5R 402

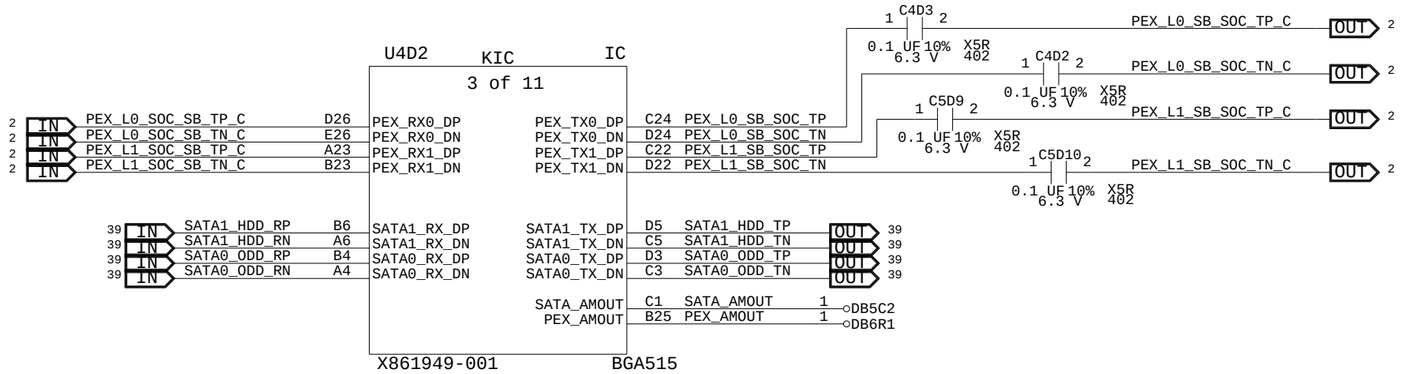
C4B8 1 2 0.1 UF 10% 6.3 V X5R 402

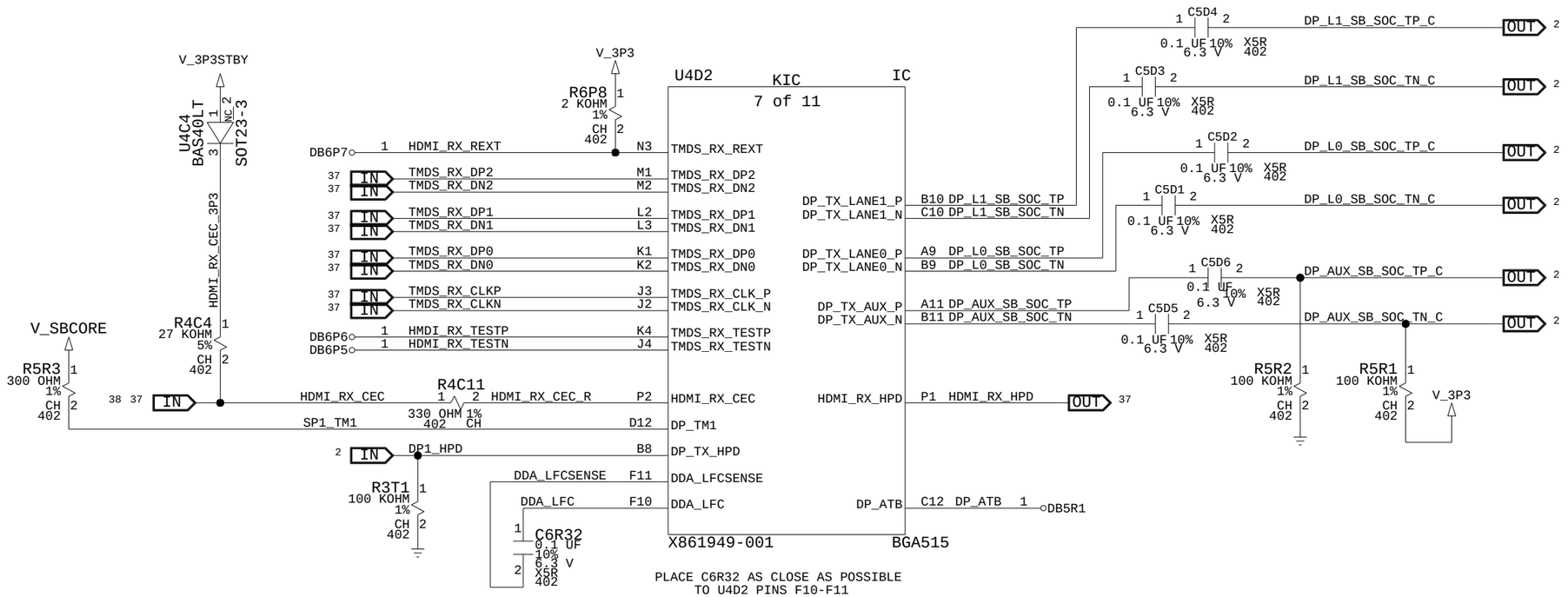
C4B7 1 2 0.1 UF 10% 6.3 V X5R 402

X861949-001 BGA515

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 24/86 | 24/86 | M | 1.0 |

# KIC: PCIEX,SATA,VIDEO




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 25/86 | 25/86 | M | 1.0 |

# KIC: SMC

U4D2 KIC IC
4 of 11

V_3P3STBY
R4D32 4.7 KOHM 1% EMPTY 402
FT6R6 FTP 1
78 42 29 IN SMC_RST_N — AF23 SMC_RST_N_IN
80 40 IN PWRSW_N — V23 SMC_P4_GPIO7
80 40 IN EJECTSW_N — V22 SMC_P4_GPIO6
40 IN BINDSW_N — T23 SMC_P4_GPIO5
40 IN INT_N — U23 SMC_P4_GPIO4
55 OUT VREG_V5P0_DUAL_SEL0 — U22 SMC_P4_GPIO3
63 OUT IR_BLAST_EN_N — R5R19 0 OHM 5% 402 CH — SMC_P4_GPIO2 — U21 SMC_P4_GPIO2
32 OUT ENET_RST_N — T21 SMC_P4_GPIO1
FT5N6 FTP 1
32 IN ENET_WAKE_N — R23 SMC_P4_GPIO0
FT5N9 FTP 1
63 OUT IR_BLAST_SMC_OUT — R5E5 0 OHM 5% 402 CH — SMC_P3_GPIO7 — L21 SMC_P3_GPIO7
36 IN USB_AUX_OCP_FLT_N — M22 SMC_P3_GPIO6
83 59 54 IN VREG_V5P0_PWRGD — N22 SMC_P3_GPIO5
83 59 54 OUT VREG_V5P0_EN — N21 SMC_P3_GPIO4
83 57 51 50 IN VREG_PWRGPB_PWRGD — P21 SMC_P3_GPIO3
83 57 51 50 OUT VREG_PWRGPB_EN — R21 SMC_P3_GPIO2
83 56 53 52 IN VREG_PWRGPA_PWRGD — R22 SMC_P3_GPIO1
83 56 53 52 OUT VREG_PWRGPA_EN — P23 SMC_P3_GPIO0

I21

V_5P0 R6R3 10 KOHM 1% CH 402
V_5P0 R6R2 10 KOHM 1% CH 402
R6R8 10 KOHM 1% CH 402
V_3P3STBY R6R15 10 KOHM 1% CH 402
V_SOC1P8
R4D25 1.27 KOHM 1% CH 402
R4D27 1.27 KOHM 1% CH 402
R5T2 2 KOHM 1% CH 402
R5T1 2 KOHM 1% CH 402

63 IN IR_BLAST_TXD — R6R14 10 OHM 1% CH 402 — SMC_RXD
78 IN FTDI_SMC_CTS — FT6R14 FTP 1 — V25 SMC_UART1_RXD
R6R13 100 OHM 1% EMPTY 402
FT6R13 FTP 1
SMC_CTS — V26 SMC_UART1_CTS

8 BI SB_SOC_DATA — R4D29 243 OHM 1% 402 CH — SB_SOC_DATA_R — FT6R4 — AE21 SMBUS3_SDA
8 OUT SB_SOC_CLK — R4D30 243 OHM 1% 402 CH — SB_SOC_CLK_R — FT6R5 — AD21 SMBUS3_SCK
FT6R3 FTP 1
78 64 54 50 44 40 BI SMBUS_DATA — R4D28 0 OHM 5% 402 CH — SMBUS_DATA_R — AE20 SMBUS2_SDA
SMBUS_CLK_R — AF20 SMBUS2_SCK
FT6R2 FTP 1
78 64 54 50 44 40 OUT SMBUS_CLK — R4D26 0 OHM 5% 402 CH — HDMI_TX_DDC_DATA_SB — H6 SMBUS1_SDA
HDMI_TX_DDC_CLK_SB — G6 SMBUS1_SCK

DDC = HDMI OUT
38 BI SB_DDC_DATA — R5D2 49.9 OHM 1% 402 CH
38 OUT SB_DDC_CLK — R5D1 49.9 OHM 1% 402 CH

RX_DDC = HDMI IN
37 BI HDMI_RX_DDC_DATA_SB — G5 SMBUS0_SDA
37 OUT HDMI_RX_DDC_CLK_SB — F5 SMBUS0_SCK
AC14 SECURITY_BYPASS
40 IN IR_DATA — N26 SMC_IR_IN

X861949-001 BGA515

T24 SMC_TXD — FT6R11 — R6R11 33 OHMS 1% CH 402 — IR_BLAST_RXD — OUT 63
V24 SMC_RTS — FT6R12 — R6R12 100 OHM 1% 402 EMPTY — FTDI_SMC_RTS — OUT 78

V_3P3STBY R4G1 100 KOHM 1% CH 402
V_5P0 R9C13 10 KOHM 1% CH 402

SMC_P2_GPIO7 G2 VREG_CPUGFX_PWRGD — IN 44 45 83
SMC_P2_GPIO6 F2 COLD_RESET_N — IN 81
SMC_P2_GPIO5 G1 HDD_PWR_EN_N — OUT 39
SMC_P2_GPIO4 F1 ODD_3P3V_STBY_EN — OUT 39
SMC_P2_GPIO3 G3 ODD_PWR_EN — OUT 39
SMC_P2_GPIO2 H5 ODD_OPEN — OUT 39
SMC_P2_GPIO1 J5 ODD_STATUS — IN 39
SMC_P2_GPIO0 J6 ODD_WAKE_N — IN 39

V_SOC1P8
R5R18 4.7 KOHM 1% CH 402
R5T3 4.7 KOHM 1% CH 402

SMC_P1_GPIO7 J21 SOC_THERMTRIP_R — R5R9 0 OHM 5% 402 CH — SOC_THERMTRIP
SMC_P1_GPIO6 H21 SOC_PWR_OK_R — R5R11 0 OHM 5% 402 CH — SOC_PWR_OK
SMC_P1_GPIO5 J22 SOC_RST_N_R — R5R13 0 OHM 5% 402 CH — SOC_RST_N
SMC_P1_GPIO4 K22 SP_SMC_INT_N_R — R5R12 0 OHM 5% 402 CH — SP_SMC_INT_N
SMC_P1_GPIO3 J23 FAN_PWM — OUT 40
SMC_P1_GPIO2 H25 SMC_P1_GPIO2 — R5R16 0 OHM 5% 402 CH — USB_AUX_EN — OUT 36
SMC_P1_GPIO1 J25 SMC_P1_GPIO1 — DB5D15
SMC_P1_GPIO0 H26 LED_NEXUS_R — OUT 40

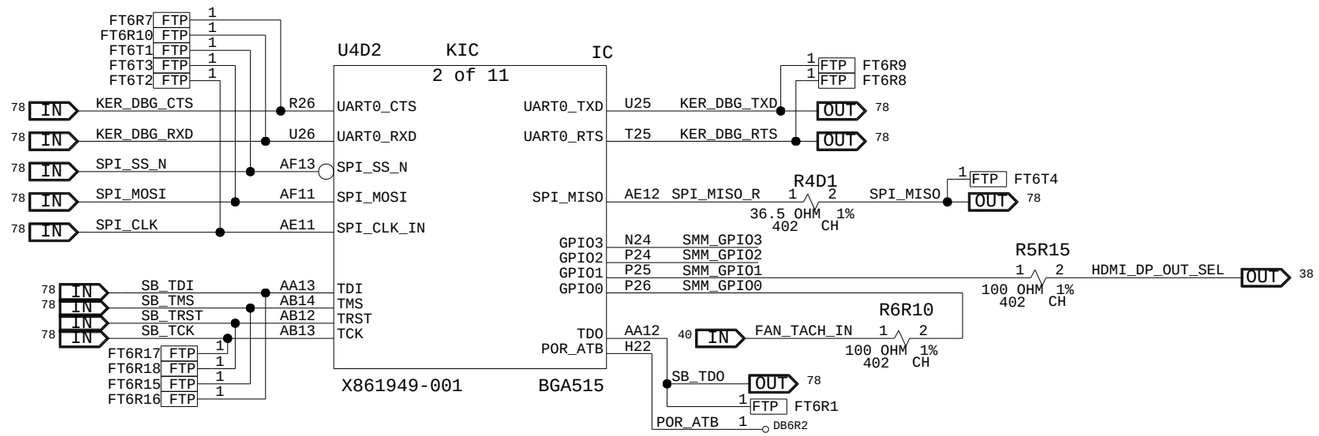
R5R10 4.7 KOHM 1% CH 402

SOC_THERMTRIP — IN 8
SOC_PWR_OK — OUT 8 44 81
SOC_RST_N — OUT 8 81
SP_SMC_INT_N — IN 8
FT5R2 FT5R1 FT5R3 FT4T1

SMC_P0_GPIO7 M23 HDMI_V_5P0_EN — OUT 38
SMC_P0_GPIO6 M24 PSU_V12P0_EN — OUT 41 42
SMC_P0_GPIO5 L23 DP0_HPD — IN 2 38
SMC_P0_GPIO4 K24 WIFI_RESET_N — OUT 36
SMC_P0_GPIO3 L25 ENET_V_3P3STBY_EN_N — OUT 32
SMC_P0_GPIO2 M25 HDMI_RX_DDC_5V_E_R — R6R7 0 OHM 5% 402 CH — HDMI_RX_DDC_5V_E — IN 37
SMC_P0_GPIO1 L26 SMC_DBG_LED0_SWO — OUT 78
SMC_P0_GPIO0 K26 VREG_SB1P8_EN — OUT 59

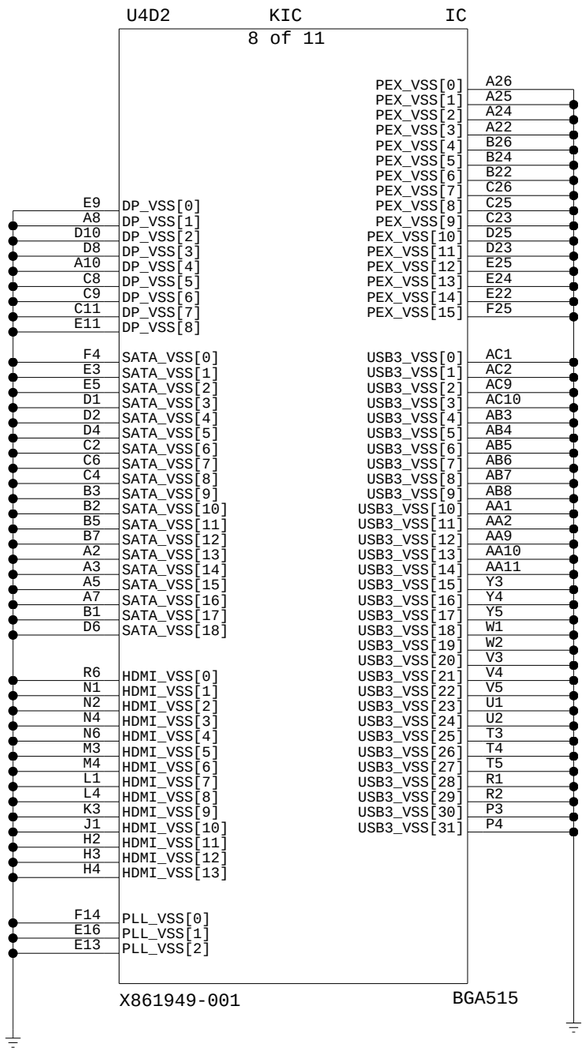
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 26/86 | 26/86 | M | 1.0 |

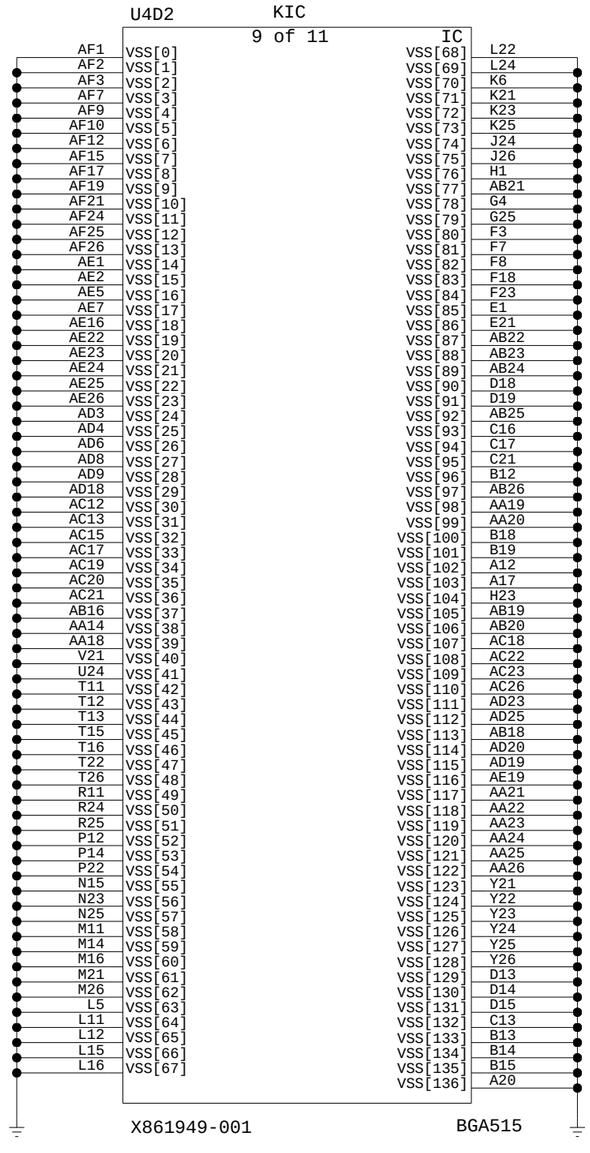
# KIC: FACET




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 27/86 | 27/86 | M | 1.0 |

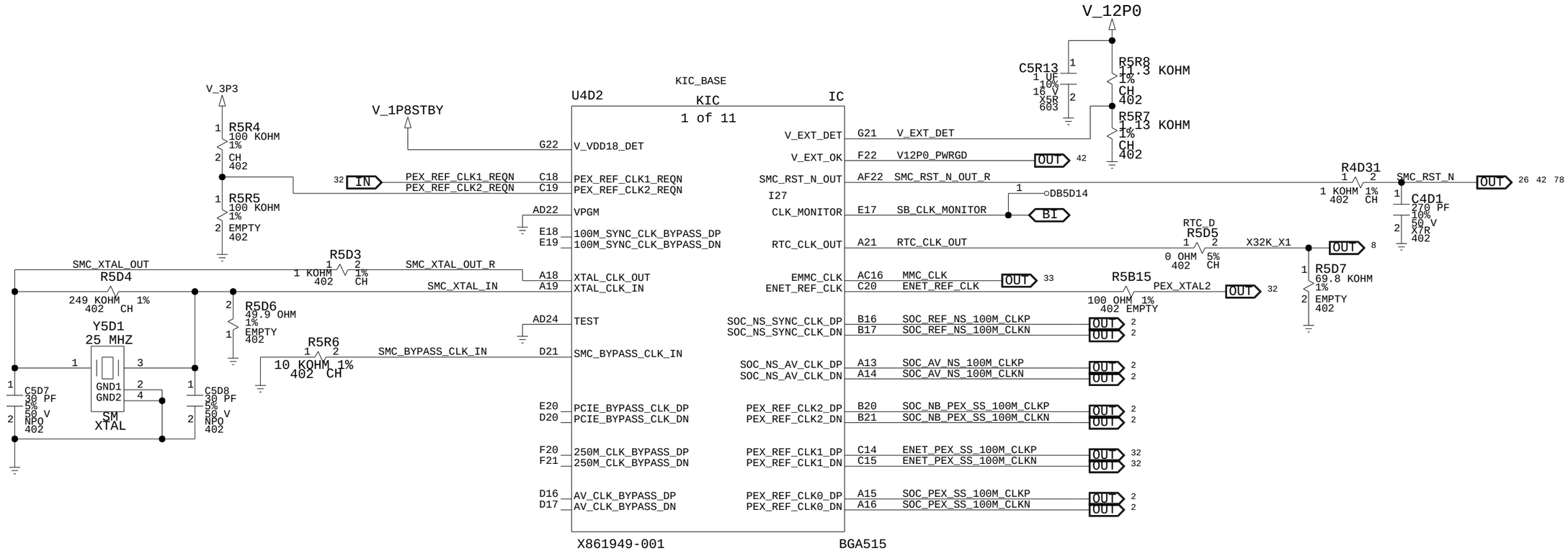
# KIC: POWER




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 28/86 | 28/86 | M | 1.0 |

# KIC: CLOCKS,STRAPPING,POR

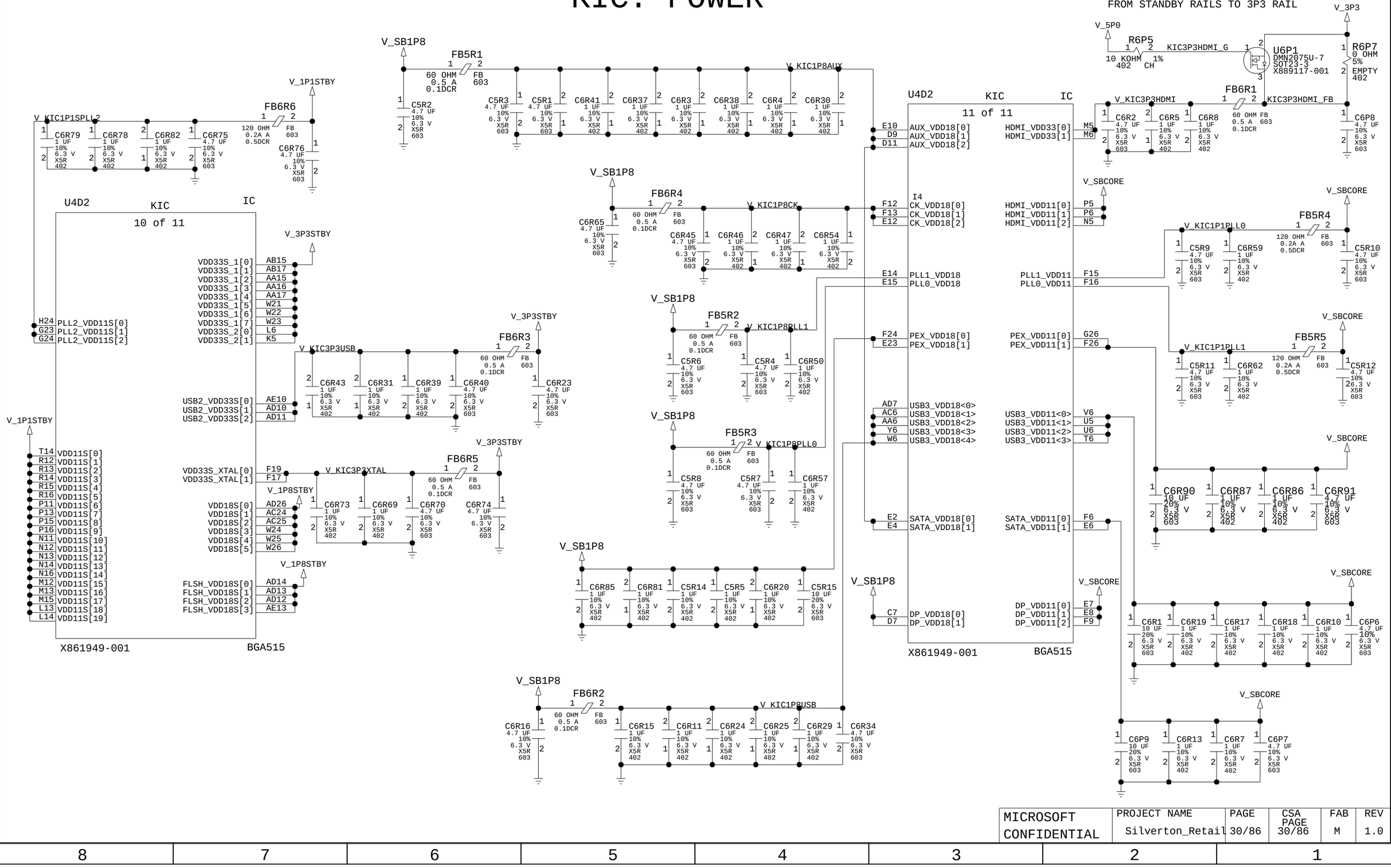



| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X861949-005 | IC | U4D2 | IC,KRAKEN SB,BGA515 | KIC_RETAIL |
| X861949-003 | IC | U4D2 | IC,KRAKEN SB,BGA515 | KIC_DEV |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 29/86 | 29/86 | M | 1.0 |

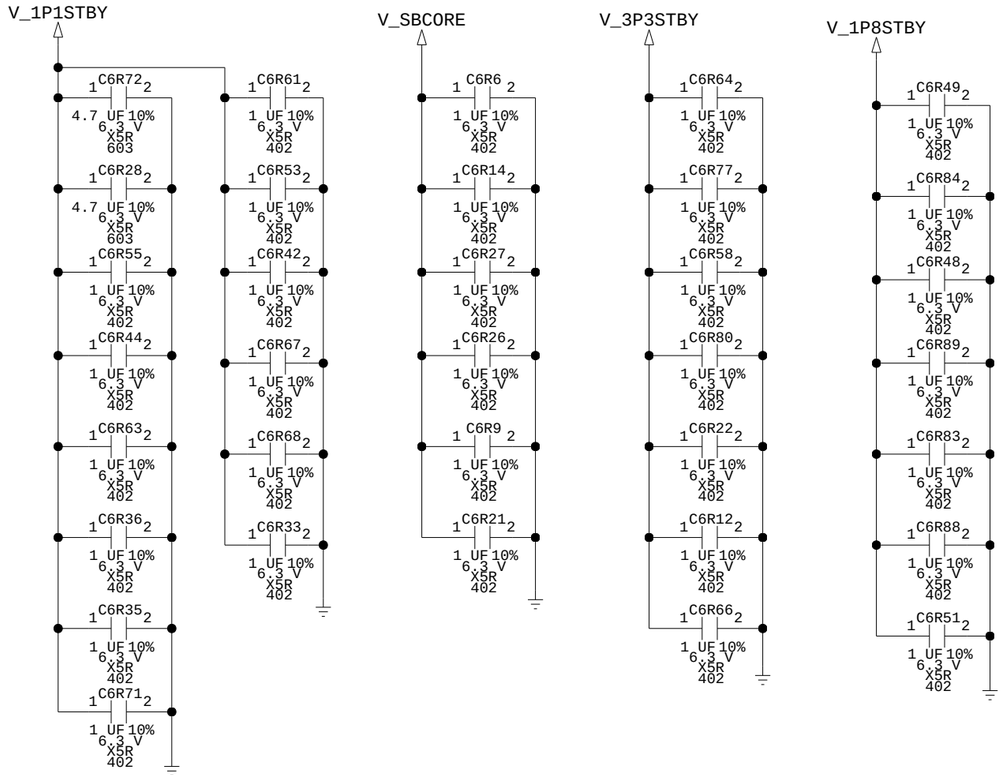
# KIC: POWER

FET PREVENTS LEAKAGE THROUGH KRAKEN
FROM STANDBY RAILS TO 3P3 RAIL




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 30/86 | 30/86 | M | 1.0 |

# KIC: DECOUPLING




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 31/86 | 31/86 | M | 1.0 |

# ETHERNET CONTROLLER

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X887852-001 | IC | U5B2 | IC,SM,QFN48,RTL8111HNM-CG | ENET_CTRLR_NEW |

C5B4,C5B5 --> 22PF
C5B4,C5B5 --> 22PF
C5B4,C5B5 --> 22PF
PENDING CRYSTAL
QUALIFICATION

| PROPERTY | MEANING |
|---|---|
| ENET_D | GREYBULL DESIGN |
| ENET_S | SILVERTON BACKUP |
| ENET_S2 | SILVERTON POR |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 32/86 | 32/86 | M | 1.0 |

# EMMC

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X894254-001 | IC | U3D1 | MEM,SM,EMMC,THGBMBG6D1KBAIL | EMMC_TOSHIBA |
| X894055-001 | IC | U3D1 | MEM,SM,8GB,EMMC,KLM8G1GEAC-B001 | EMMC_SAMSUNG |
| X867925-001 | IC | U3D1 | MEM,SM,8GB,EMMC,H26M42003GMR | EMMC_HYNIX_20NM |
| X894231-001 | IC | U3D1 | MEM,SM,8GB,EMMC,H26M41202HPR | EMMC_HYNIX_5P0 |
| X800617-001 | CH | R4D10,R4D12,R4D14,R4D16,R4D18,R4D20,R4D22,R4D24 | RES-FXD,SM,49.9 OHM 1%,1/16W,0402 | EMMC_TOSHIBA,EMMC_SAMSUNG |
| X809936-001 | CH | R4D10,R4D12,R4D14,R4D16,R4D18,R4D20,R4D22,R4D24 | RES-FXD,SM,100 OHM 1%,1/16W,0402 | EMMC_HYNIX_20NM,EMMC_HYNIX_5P0 |
| X800967-001 | CH | R4D8 | RES-FXD,SM,0 OHM 5%,1/16W,0402 | EMMC_TOSHIBA |
| X800967-001 | CH | R4D8 | RES-FXD,SM,0 OHM 5%,1/16W,0402 | EMMC_HYNIX_20NM,EMMC_HYNIX_5P0,EMMC_SAMSUNG |

R4D8 VALUE TBD FOR TOSHIBA & HYNIX

V_1P8STBY

R4D4 R4D9 R4D13 R4D11 R4D17 R4D15 R4D21 R4D19 R4D23 402 CH 10 KOHM 1%

MMC_DATA<7> MMC_DATA<6> MMC_DATA<5> MMC_DATA<4> MMC_DATA<3> MMC_DATA<2> MMC_DATA<1> MMC_DATA<0> MMC_CMD MMC_CLK MMC_RST_N

EMMC_BASE R4D10 R4D14 R4D12 R4D18 R4D16 R4D22 R4D20 R4D24 R4D8 R4D5 0 OHM 5% 402 CH

R4D2 1 KOHM 1% 402 CH

R4D3 10 KOHM 1% EMPTY 402

FT7R4 FTP FT7R3 FTP

R4D7 10 KOHM 1% CH 402

U3D1 IC — emmc_169pin 1 of 3 — X866676-001 BGA169B

| | | |
|---|---|---|
| MMC_DATA_R<7> | J6 | DATA7 |
| MMC_DATA_R<6> | J5 | DATA6 |
| MMC_DATA_R<5> | J4 | DATA5 |
| MMC_DATA_R<4> | J3 | DATA4 |
| MMC_DATA_R<3> | J2 | DATA3 |
| MMC_DATA_R<2> | H5 | DATA2 |
| MMC_DATA_R<1> | H4 | DATA1 |
| MMC_DATA_R<0> | H3 | DATA0 |
| MMC_CMD_R | W5 | CMD |
| MMC_CLK_R | W6 | CLK |
| MMC_RST_N_R | U5 | RSTN |

VCCQ4 AA5, VCCQ3 AA3, VCCQ2 Y4, VCCQ1 W4, VCCQ0 K6; VCC3 U9, VCC2 T10, VCC1 N5, VCC0 M6; VDDI K2 — VDDI_ROUTE

VSSQ4 AA6, VSSQ3 AA4, VSSQ2 Y5, VSSQ1 Y2, VSSQ0 K4, VSS3 U8, VSS2 R10, VSS1 P5, VSS0 M7

C7R3 0.1 UF 10% 6.3 V X5R 402; C3D2 0.1 UF 10% 6.3 V X5R 402; C7R4 2.2 UF 20% 6.3 V X5R 402; C7R8 1 UF 10% 6.3 V X5R 402; C6R52 0.1 UF 10% 6.3 V X5R 402; C6R60 0.1 UF 10% 6.3 V X5R 402; C6R56 2.2 UF 20% 6.3 V X5R 402

V_3P3STBY

C7R5 0.1 UF 10% 6.3 V X5R 402; C7R6 0.1 UF 10% 6.3 V X5R 402; C7R7 2.2 UF 20% 6.3 V X5R 402

C3D3 1 UF 10% 6.3 V X5R 402

MMC_X NETS ARE DUMMY NETS
TO IMPROVE PAD ADHESION

U4D2 KIC IC — 5 of 12 — I446 — X861949-001 BGA515

MMC_DATA<7..0> BI 33

| | | |
|---|---|---|
| MMC_DATA7 | AE18 | 7 |
| MMC_DATA6 | AD15 | 6 |
| MMC_DATA5 | AE15 | 5 |
| MMC_DATA4 | AD16 | 4 |
| MMC_DATA3 | AF16 | 3 |
| MMC_DATA2 | AF18 | 2 |
| MMC_DATA1 | AD17 | 1 |
| MMC_DATA0 | AE17 | 0 |

MMC_CMD AF14 MMC_CMD OUT 33

MMC_RESET_N AE14 MMC_RST_N OUT 33

U3D1 IC — eMMC_169PIN 2 of 3 — X866676-001 BGA169B

| | | | | | |
|---|---|---|---|---|---|
| A4 | NC0 | | NC35 | K14 | |
| A6 | NC1 | | NC36 | L1 | |
| A9 | NC2 | | NC37 | L2 | |
| A11 | NC3 | | NC38 | L3 | D5 |
| B2 | NC4 | | NC39 | L4 | |
| B13 | NC5 | | NC40 | L12 | |
| D1 | NC6 | | NC41 | L13 | |
| D14 | NC7 | | NC42 | L14 | |
| MMC_X7 H1 | NC8 | | NC43 | M1 | |
| D4 H2 | NC9 | | NC44 | M2 | |
| H8 | NC10 | | NC45 | M3 | |
| H9 | NC11 | | NC46 | M12 | |
| H10 | NC12 | | NC47 | M13 | |
| H11 | NC13 | | NC48 | M14 | |
| H12 | NC14 | | NC49 | N1 | |
| MMC_X6 H13 | NC15 | | NC50 | N2 | |
| MMC_X4 H14 | NC16 | | NC51 | N3 | |
| MMC_X8 J1 | NC17 | | NC52 | N12 | |
| J7 | NC18 | | NC53 | N13 | |
| J8 | NC19 | | NC54 | N14 | |
| J9 | NC20 | | NC55 | P1 | |
| J10 | NC21 | | NC56 | P2 | |
| J11 | NC22 | | NC57 | P12 | |
| J12 | NC23 | | NC58 | P13 | |
| J13 | NC24 | | NC59 | P14 | |
| MMC_X5 J14 | NC25 | | NC60 | R1 | |
| D3 K1 | NC26 | | NC61 | R2 | |
| D5 K3 | NC27 | | NC62 | R3 | |
| K7 | NC28 | | NC63 | R12 | |
| D7 K8 | NC29 | | NC64 | R13 | |
| K9 | NC30 | | NC65 | R14 | |
| K10 | NC31 | | NC66 | T1 | |
| K11 | NC32 | | NC67 | T2 | |
| K12 | NC33 | | NC68 | T3 | |
| K13 | NC34 | | NC69 | T12 | |

U3D1 IC — eMMC_169PIN 3 of 3 — X866676-001 BGA169B

DB3D3 1 MMC_AA10

EMMC_5 R3D5 1 2 MMC_H6 H6 — 0 OHM 5% 402 CH — D6 K5

EMMC_5 R7R6 1 2 10 KOHM 1% 402 CH

EMMC_5 R7R5 1 2 MMC_RCLK R5, MMC_T5 T5 — 0 OHM 5% 402 CH — MMC_U1 U1

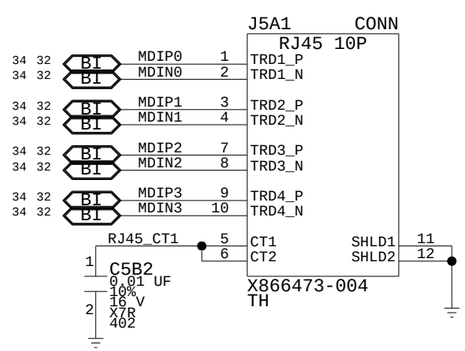
| | | | | | |
|---|---|---|---|---|---|
| AA7 | RFU0 | | NC87 | W7 | |
| AA10 | RFU1 | | NC88 | W8 | |
| H6 | RFU2 | | NC89 | W9 | |
| H7 | RFU3 | | NC90 | W10 | |
| K5 | RFU4 | | NC91 | W11 | |
| M5 | RFU5 | | NC92 | W12 | |
| M8 | RFU6 | | NC93 | W13 | |
| M9 | RFU7 | | NC94 | W14 | |
| M10 | RFU8 | | NC95 | Y1 | MMC_X11 |
| N10 | RFU9 | | NC96 | Y3 | |
| P3 | RFU10 | | NC97 | Y6 | |
| P10 | RFU11 | | NC98 | Y7 | |
| R5 | RFU12 | | NC99 | Y8 | |
| T5 | RFU13 | | NC100 | Y9 | |
| U6 | RFU14 | | NC101 | Y10 | |
| U7 | RFU15 | | NC102 | Y11 | |
| U10 | RFU16 | | NC103 | Y12 | |
| | | | NC104 | Y13 | |
| T13 | NC70 | | NC105 | Y14 | MMC_X3 |
| T14 | NC71 | | NC106 | AA1 | MMC_X10 |
| U1 | NC72 | | NC107 | AA2 | MMC_X12 |
| U2 | NC73 | | NC108 | AA8 | |
| U3 | NC74 | | NC109 | AA9 | |
| U12 | NC75 | | NC110 | AA11 | |
| U13 | NC76 | | NC111 | AA12 | |
| U14 | NC77 | | NC112 | AA13 | MMC_X2 |
| V1 | NC78 | | NC113 | AA14 | MMC_X1 |
| V2 | NC79 | | NC114 | AE1 | |
| V3 | NC80 | | NC115 | AE14 | |
| V12 | NC81 | | NC116 | AG2 | |
| V13 | NC82 | | NC117 | AG13 | |
| V14 | NC83 | | NC118 | AH4 | |
| W1 | NC84 | | NC119 | AH6 | |
| W2 | NC85 | | NC120 | AH9 | |
| W3 | NC86 | | NC121 | AH11 | |

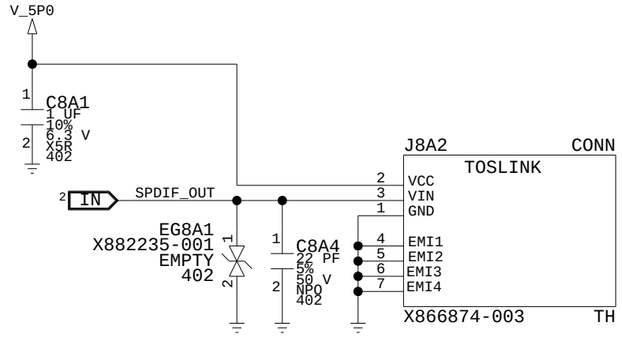
SIGNALS ROUTED TO NC PINS FOR ESCAPE

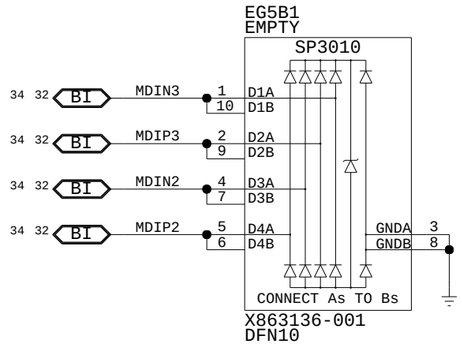
| | |
|---|---|
| D7 | PIN J6 ROUTED TO PIN K7, K8 |
| D6 | PIN J5 ROUTED TO PIN K5 |
| D5 | PIN J4 ROUTED TO PIN K3, L3 |
| D4 | PIN J3 ROUTED TO PIN H2 |
| D3 | PIN J2 ROUTED TO PIN K1 |
| VDDI | PIN K2 ROUTED TO PIN L1 |
| GND | PIN Y2 ROUTED TO PIN W1 |

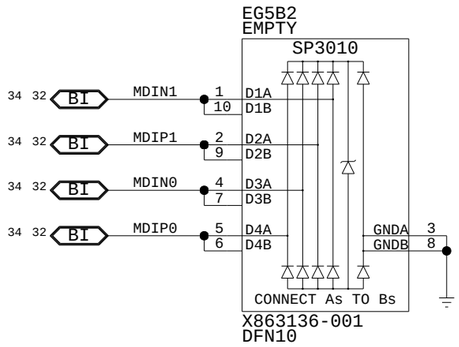
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 33/86 | 33/86 | M | 1.0 |

# CONN: RJ45,TOSLINK



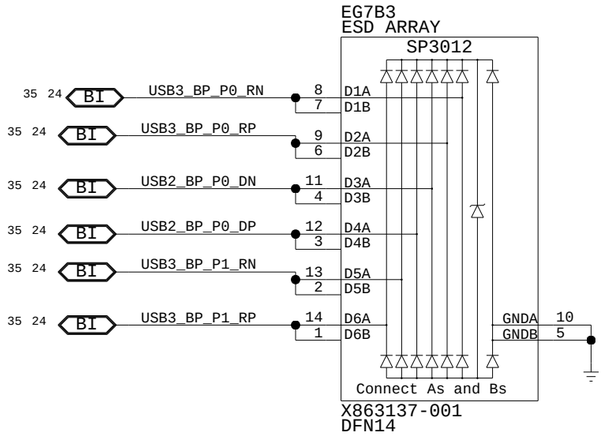



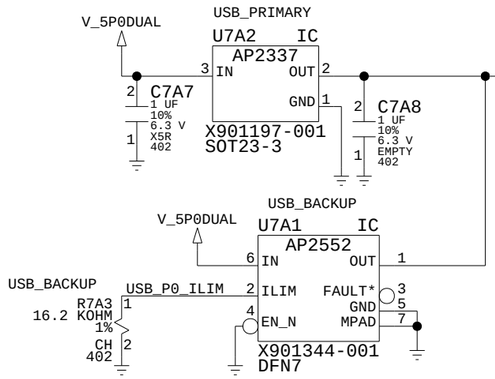



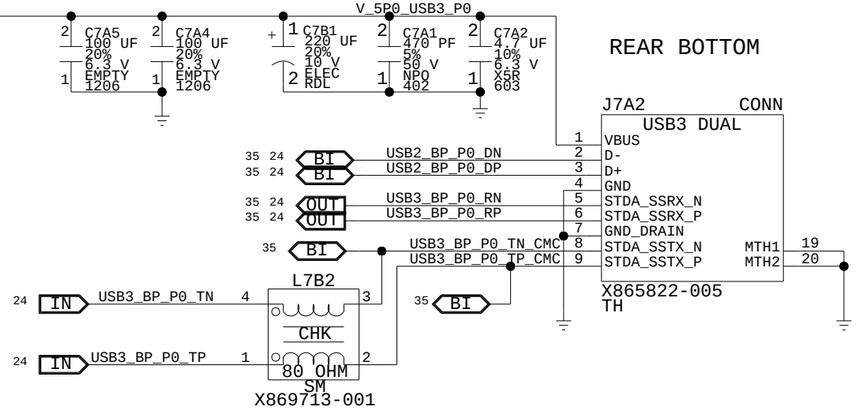



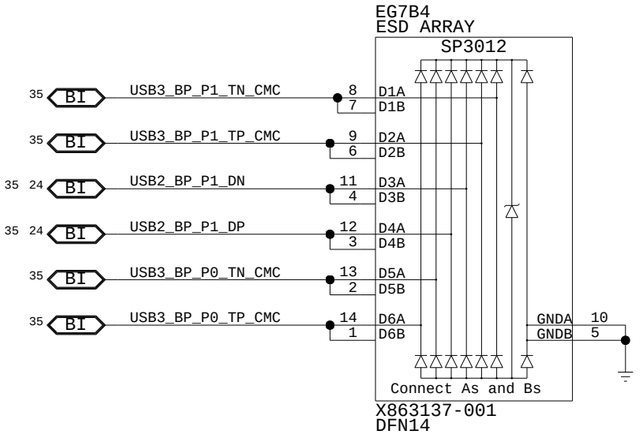

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 34/86 | 34/86 | M | 1.0 |

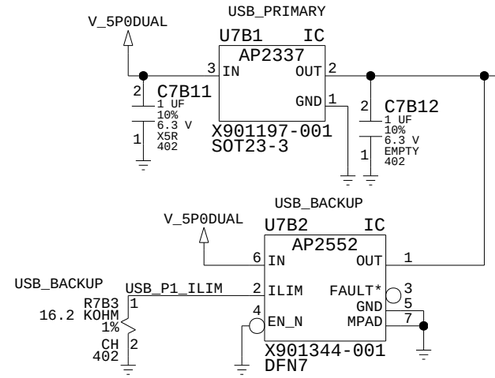
# CONN: USB (FRONT & REAR)

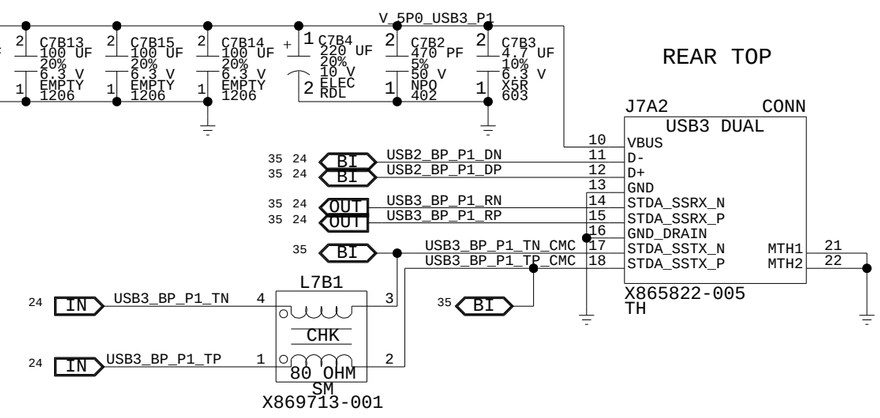


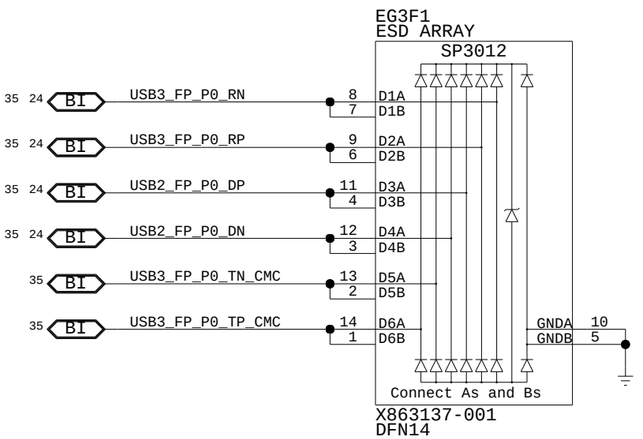



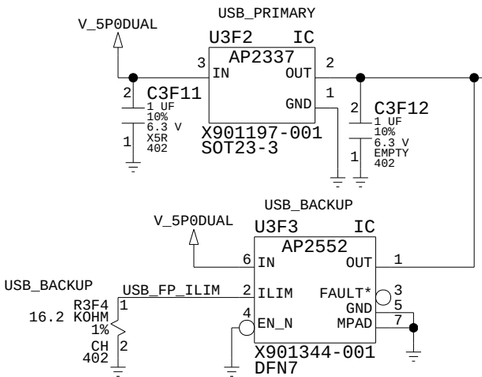



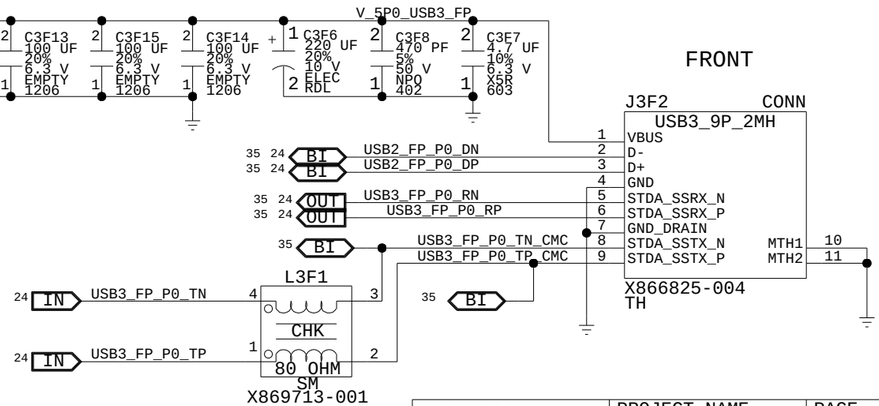



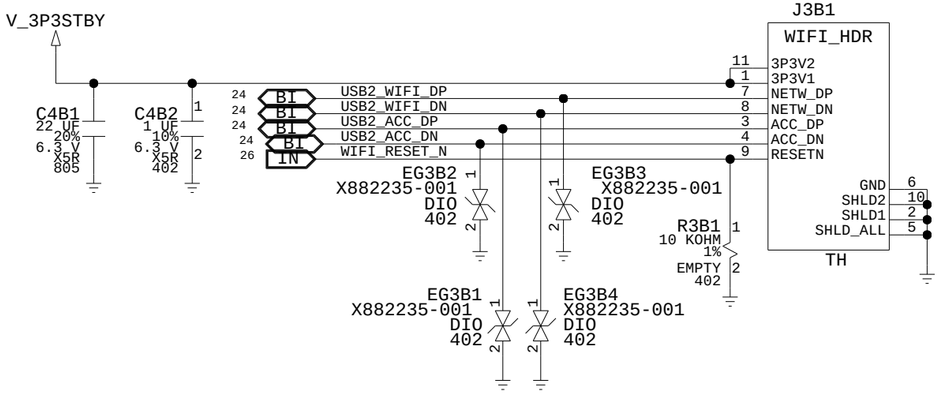



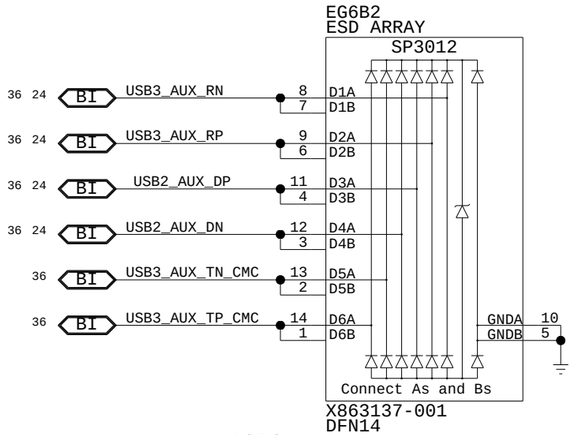



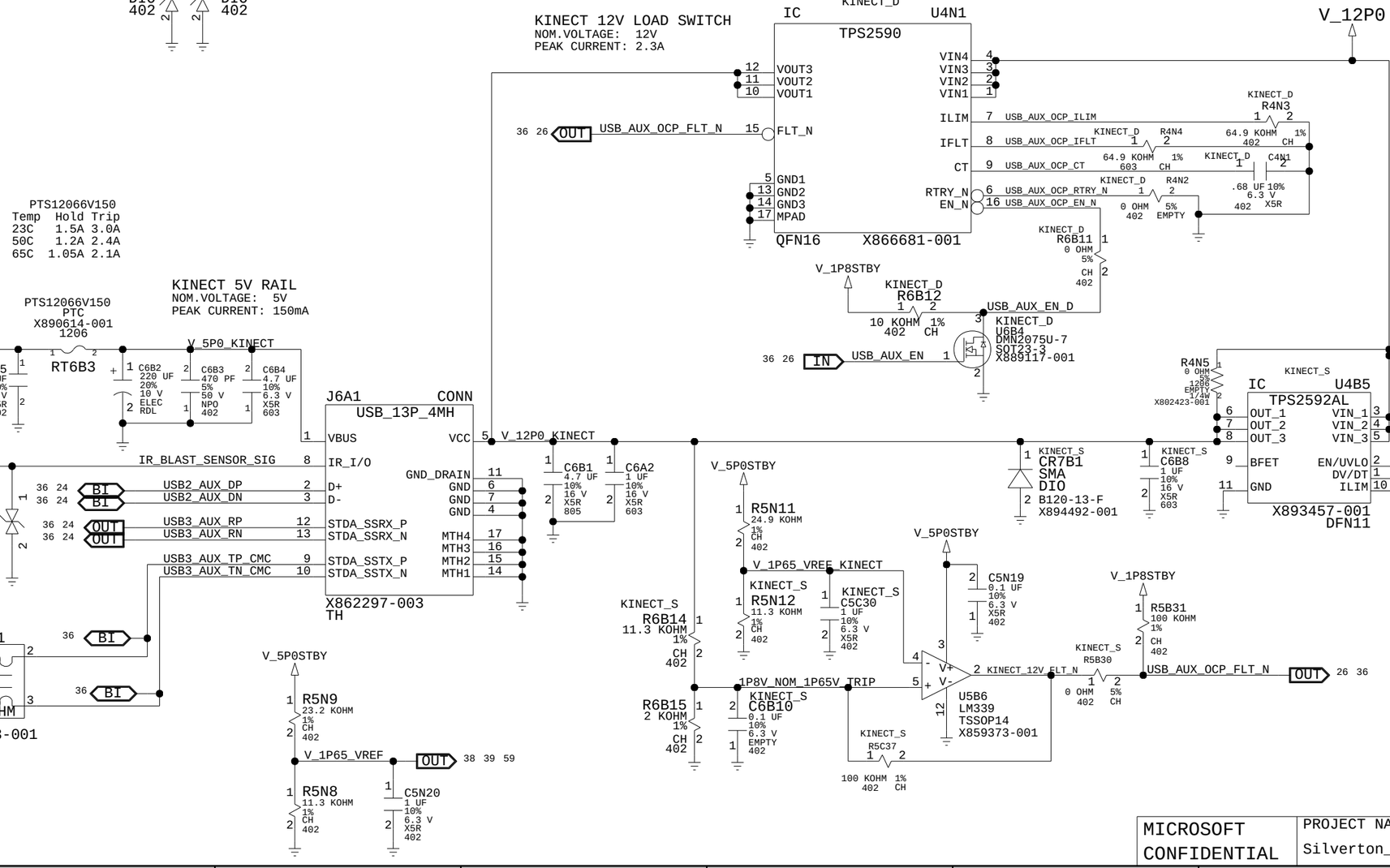




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 35/86 | 35/86 | M | 1.0 |

# CONN: USB (KINECT & WIFI)

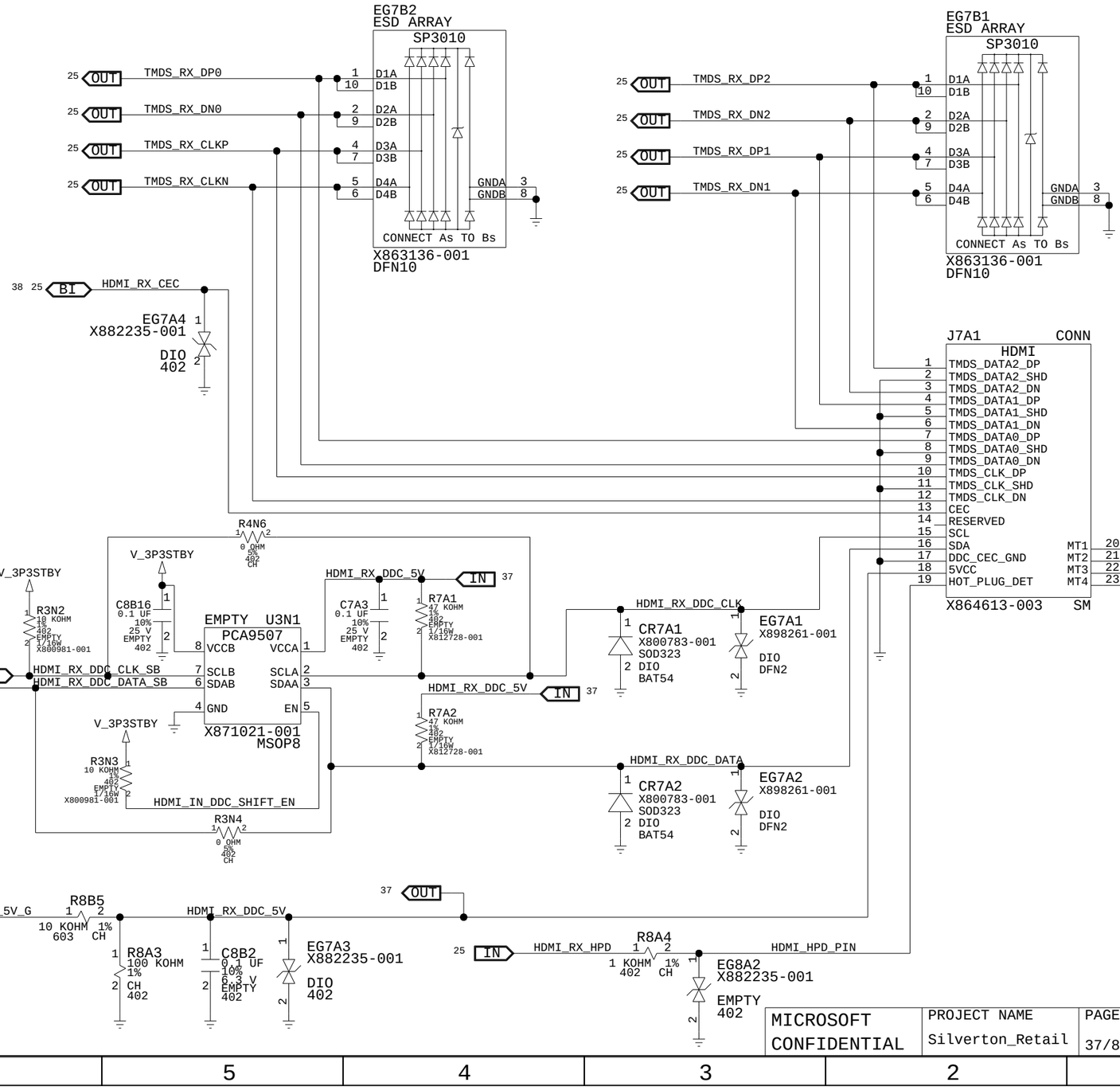



| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 36/86 | 36/86 | M | 1.0 |

# CONN: HDMI IN




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 37/86 | 37/86 | M | 1.0 |

# CONN: HDMI OUT

EG8B1 ESD ARRAY
SP3010
X863136-001
DFN10
CONNECT As TO Bs

EG8B2 ESD ARRAY
SP3010
X863136-001
DFN10
CONNECT As TO Bs

U8B2 IC
TCA9509
X899626-001
MSOP8

U1M1 IC
PCA9507
X871021-001
MSOP8

U8B1 IC
TPS2051C
X867973-001
SOT23-5

J8A1 CONN
HDMI
X864613-003 SM

U5B6
LM339
TSSOP14
X859373-001

TMDS_TX_DP2 / TMDS_TX_DN2 / TMDS_TX_DP1 / TMDS_TX_DN1 / TMDS_TX_DP0 / TMDS_TX_DN0 / TMDS_TX_CLKP / TMDS_TX_CLKN
C8B6 / C8B7 / C8B4 / C8B5 / C8B10 / C8B12 / C8B8 / C8B9
0.1 UF 10% 6.3 V X5R 402
TMDS_TX_DP2_C / TMDS_TX_DN2_C / TMDS_TX_DP1_C / TMDS_TX_DN1_C / TMDS_TX_DP0_C / TMDS_TX_DN0_C / TMDS_TX_CLKP_C / TMDS_TX_CLKN_C

V_5P0DUAL
R2N3 47.5 KOHM 1% 402 CH 1/16W X819880-001 EMPTY
R2N4 47.5 KOHM 1% 402 CH 1/16W X819880-001
TMDS_COMMON_FET
U2N1 2N7002 SOT23 X801032-001
C8B3 0.1 UF 10% 25 V X5R EMPTY 402
HDMI_DP_OUT_SEL
FT2N2 FTP

R8B9 / R8B10 / R8B7 / R8B8 / R8B13 / R8B14 / R8B11 / R8B12
499 OHM 1% 402 CH 1/16W X800700-001

V_3P3STBY
HDMI_D
R6D2 2 KOHM 1% 402 CH 1/16W X800427-001
R6D5 2 KOHM 1% 402 CH 1/16W X800427-001
DDC
R6D3 0 OHM 5% 402 CH
R6D4 0 OHM 5% 402 CH
AUX
C9A4 0.1 UF 10% 6.3 V X5R 402
C9A5 0.1 UF 10% 6.3 V X5R 402
SB_DDC_CLK
SB_DDC_DATA

C8B15 0.1 UF 10% 25 V X5R 402
C1M1 0.1 UF 10% 25 V X5R 402
R1M2 2 KOHM 1% 402 CH 1/16W X800427-001
R1M1 2 KOHM 1% 402 CH 1/16W X800427-001
R1M3 10 KOHM 1% 402 EMPTY 1/16W X800981-001
R9A3 100 KOHM 1% 402 CH 1/16W X802226-001
R9A1 22 OHM 5% 402 CH
R9A2 22 OHM 5% 402 CH
R9A4 100 KOHM 1% 402 CH 1/16W X802226-001
V_5P0_HDMI_OUT
HDMI_OUT_DDC_5V_CLK
HDMI_OUT_DDC_5V_DATA
HDMI_OUT_DDC_SHIFT_EN
HDMI_OUT_DDC_DATA_R
SOC_DDC_CLK
SOC_DDC_DATA

U9A1 / U9A2 DIO BAV99 X807401-001
EG9A2 / EG9A3 / EG8A3 X882235-001 DIO 402
EG9A1 X882235-001 DIO 402

R8A2 0 OHM 5% 402 CH 1/16W
HDMI_RX_CEC
HDMI_TX_CEC
HDMI_OUT_DDC_CLK_R
HDMI_OUT_DDC_DATA_R
V_5P0_HDMI_OUT
HDMI_TX_HPD_PIN
HDMI_TX_HPD_G
R8B4 10 KOHM 1% 402 CH 1/16W X800981-001
HDMI_OUT_DDC_SHIFT_EN_BKP

C2N1 1 UF 10% 6.3 V X5R 402
C8A3 0.1 UF 10% 6.3 V X5R 402
C8A2 4.7 UF 10% 16 V X5R 805
R2N1 10 KOHM 1% 402 CH 1/16W X806693-001
HDMI_V_5P0_EN
V_5P0_HDMI_FLT_N
DB8A1

R8B15 10 KOHM 1% 402 CH
R1N1 10 KOHM 1% 402 CH 1/16W X800981-001
R2N5 100 KOHM 1% 402 CH 1/16W X802226-001
V_1P65_VREF
DP0_HPD

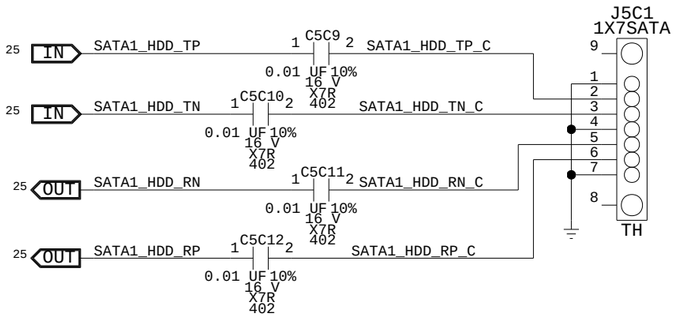
HDMI LOAD SWITCH
NOM.VOLTAGE: 5V
PEAK CURRENT: 0.5A

FOR DDC MODE: STUFF DDC PARTS, UNSTUFF AUX PARTS
FOR AUX MODE: UNSTUFF DDC PARTS, STUFF AUX PARTS
FOR PRODUCTION: DDC PARTS STUFFED, AUX UNSTUFFED

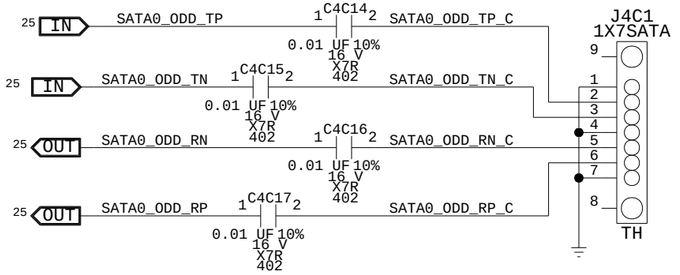
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 38/86 | 38/86 | M | 1.0 |

# CONN: ODD & HDD

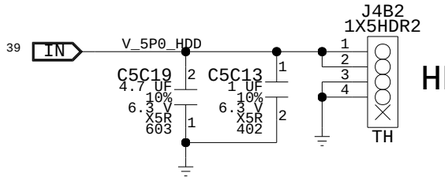
## HDD SATA



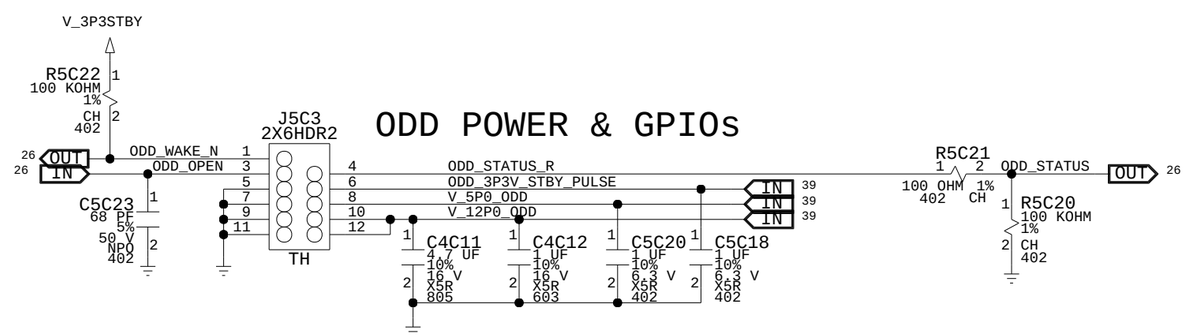

## ODD SATA

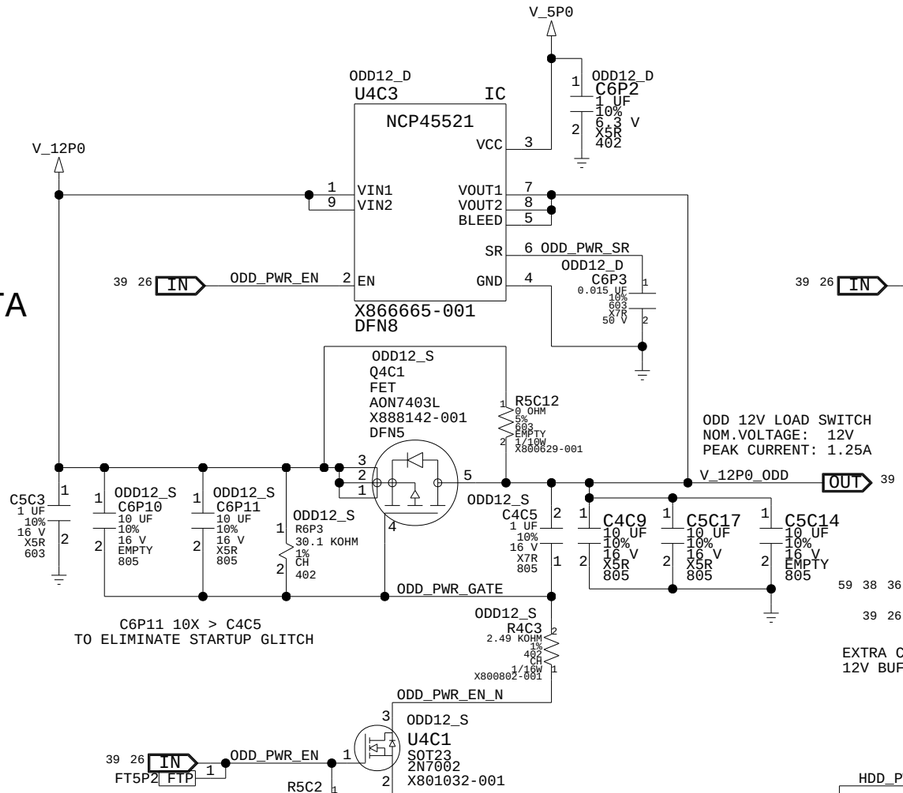


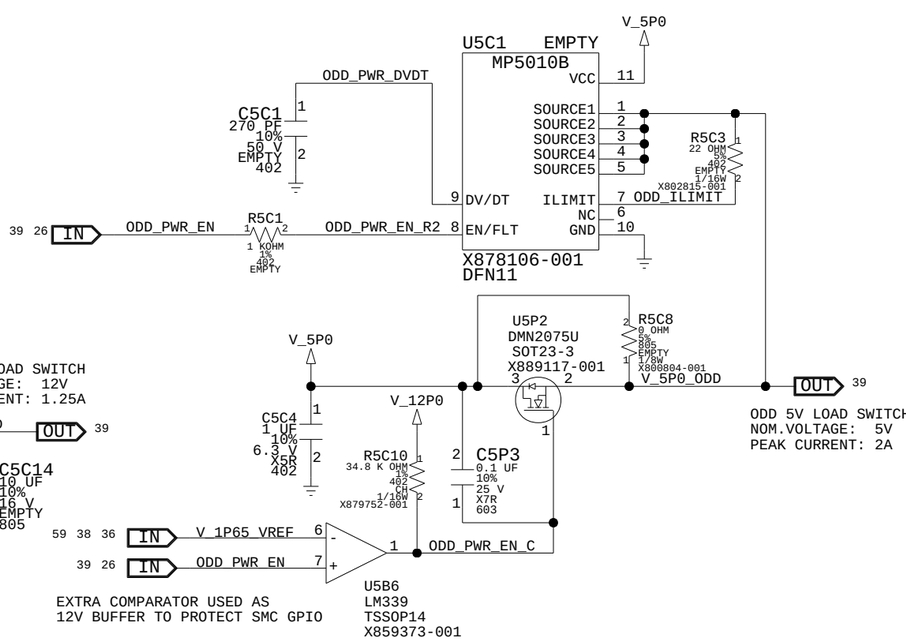

## HDD POWER

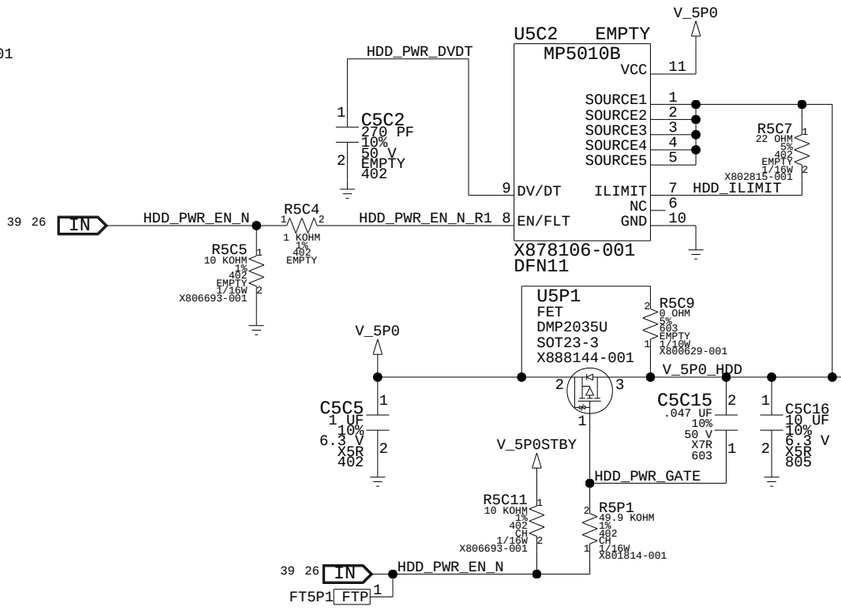



## ODD POWER & GPIOs



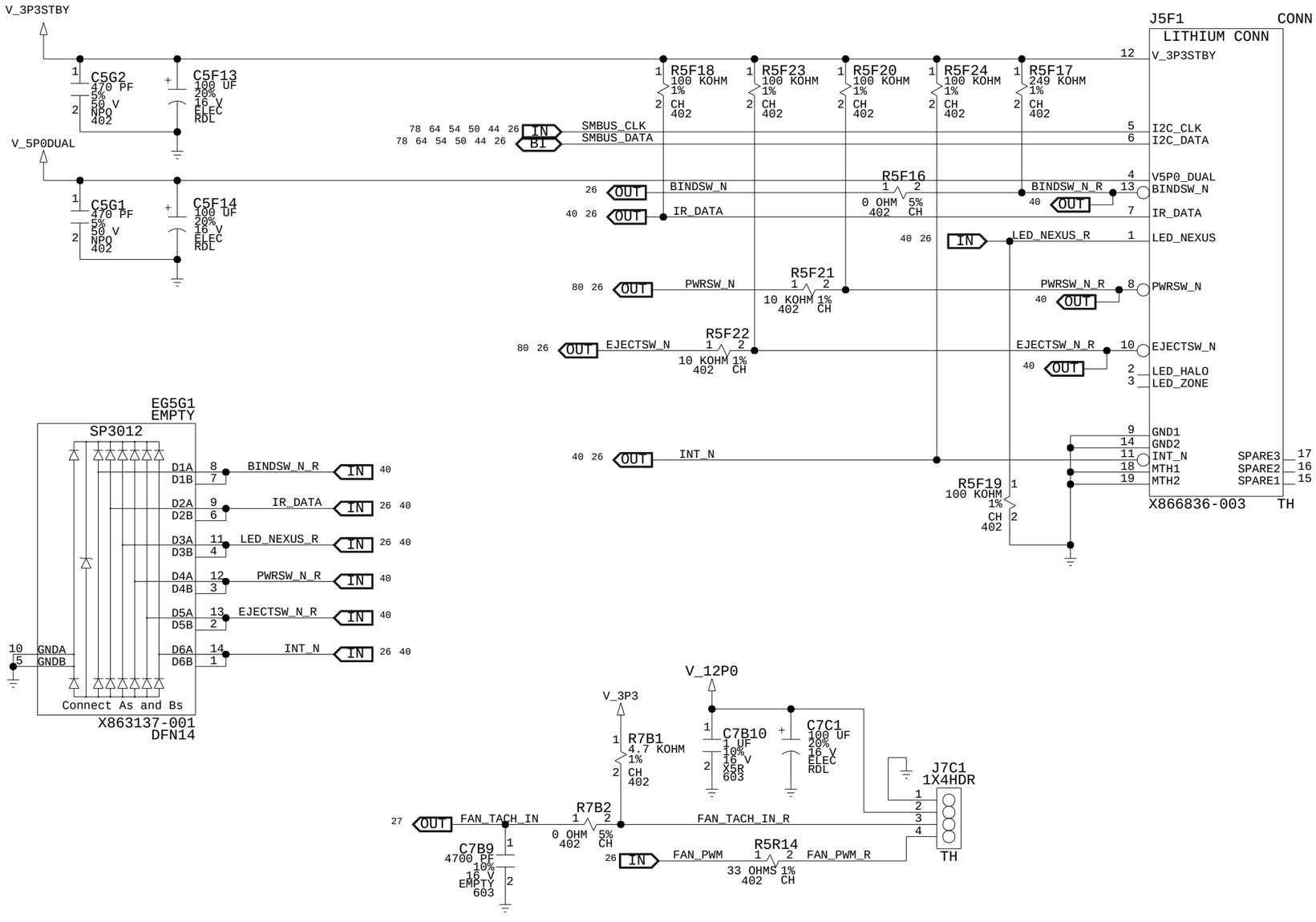



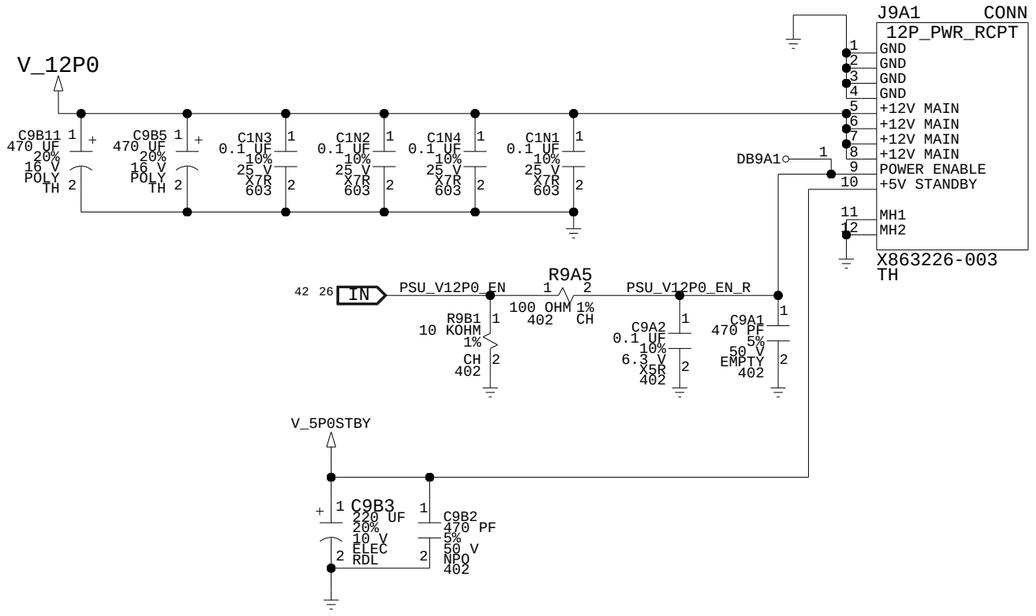

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 39/86 | 39/86 | M | 1.0 |

# CONN: FRONT PANEL,FAN




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 40/86 | 40/86 | M | 1.0 |

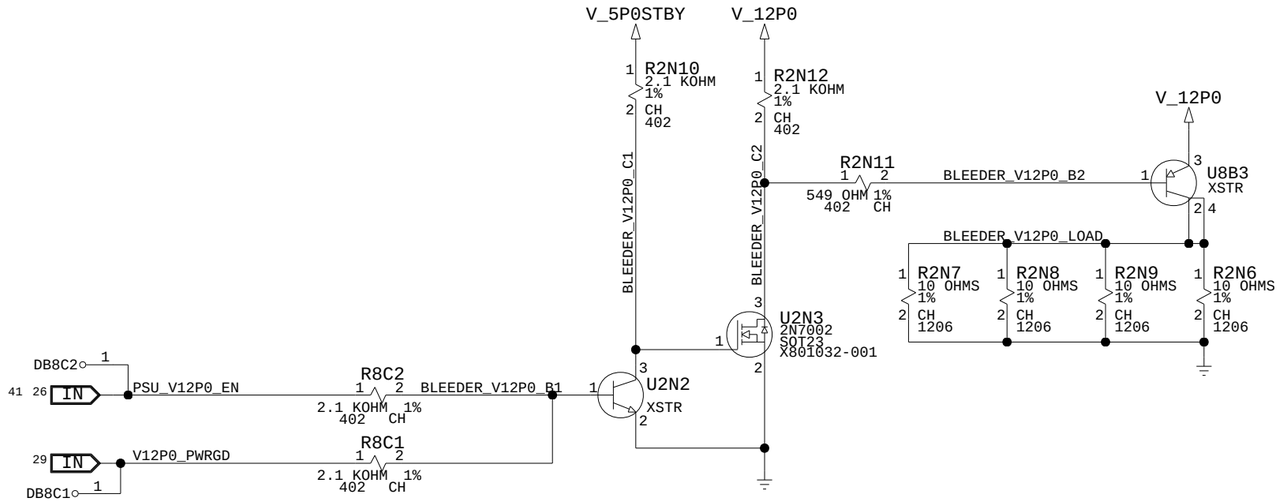
# CONN: POWER



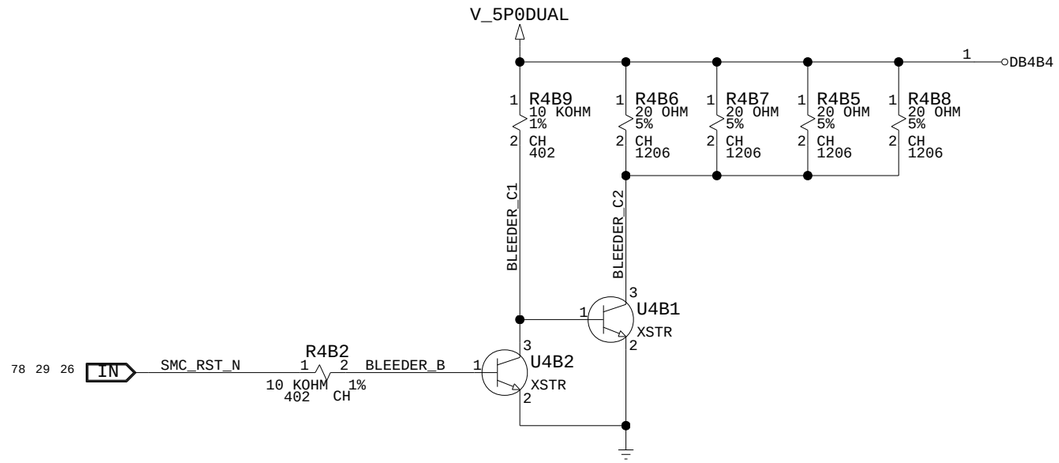

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 41/86 | 41/86 | M | 1.0 |

# VREGS: BLEEDERS

## V_12P0 BLEEDER



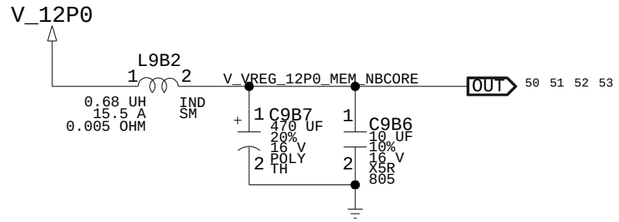

## V_5P0DUAL BLEEDER



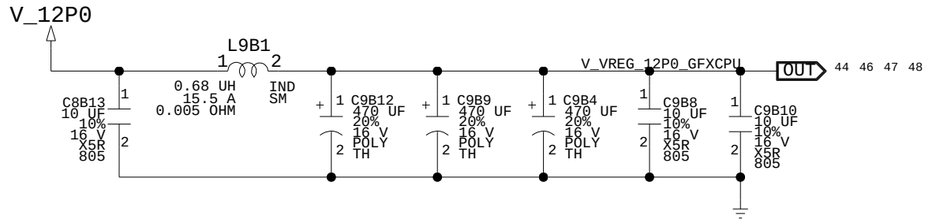

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 42/86 | 42/86 | M | 1.0 |

# VREGS: INPUT & OUTPUT FILTERS

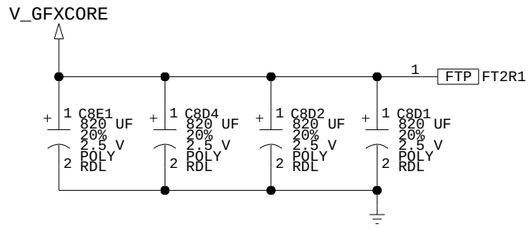
## IO/NBCORE/MEMCORE INPUT FILTER



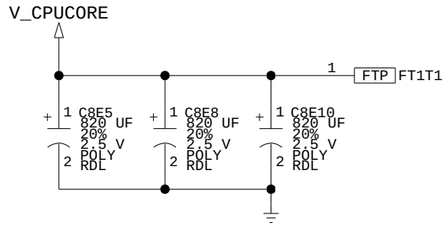

## GFX/CPU INPUT FILTER



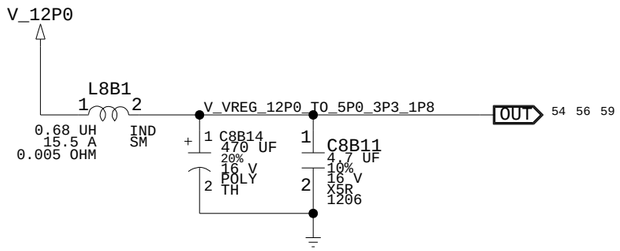

## V_GFXCORE OUTPUT FILTER




## V_CPUCORE OUTPUT FILTER

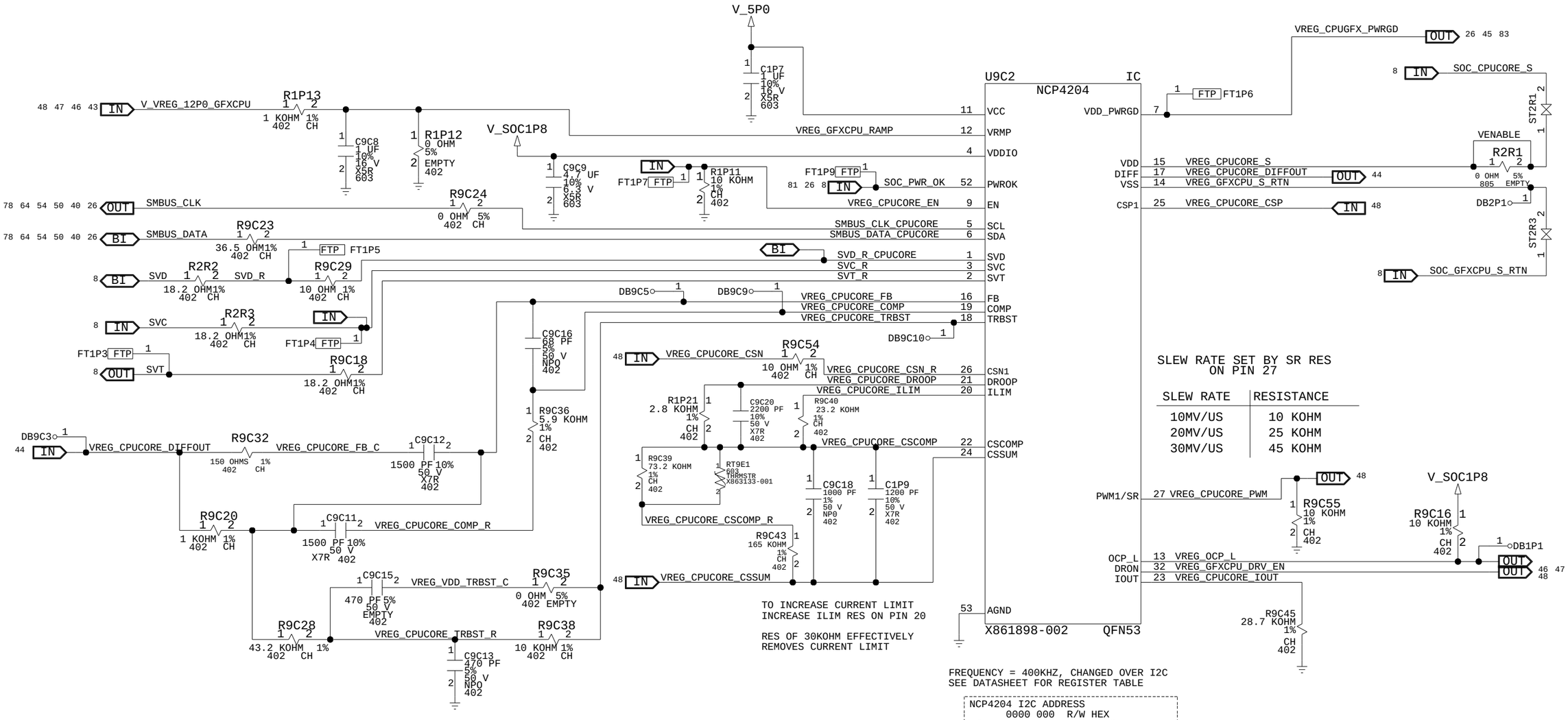



## V_5P0,V_3P3,AND V_1P8 INPUT FILTER



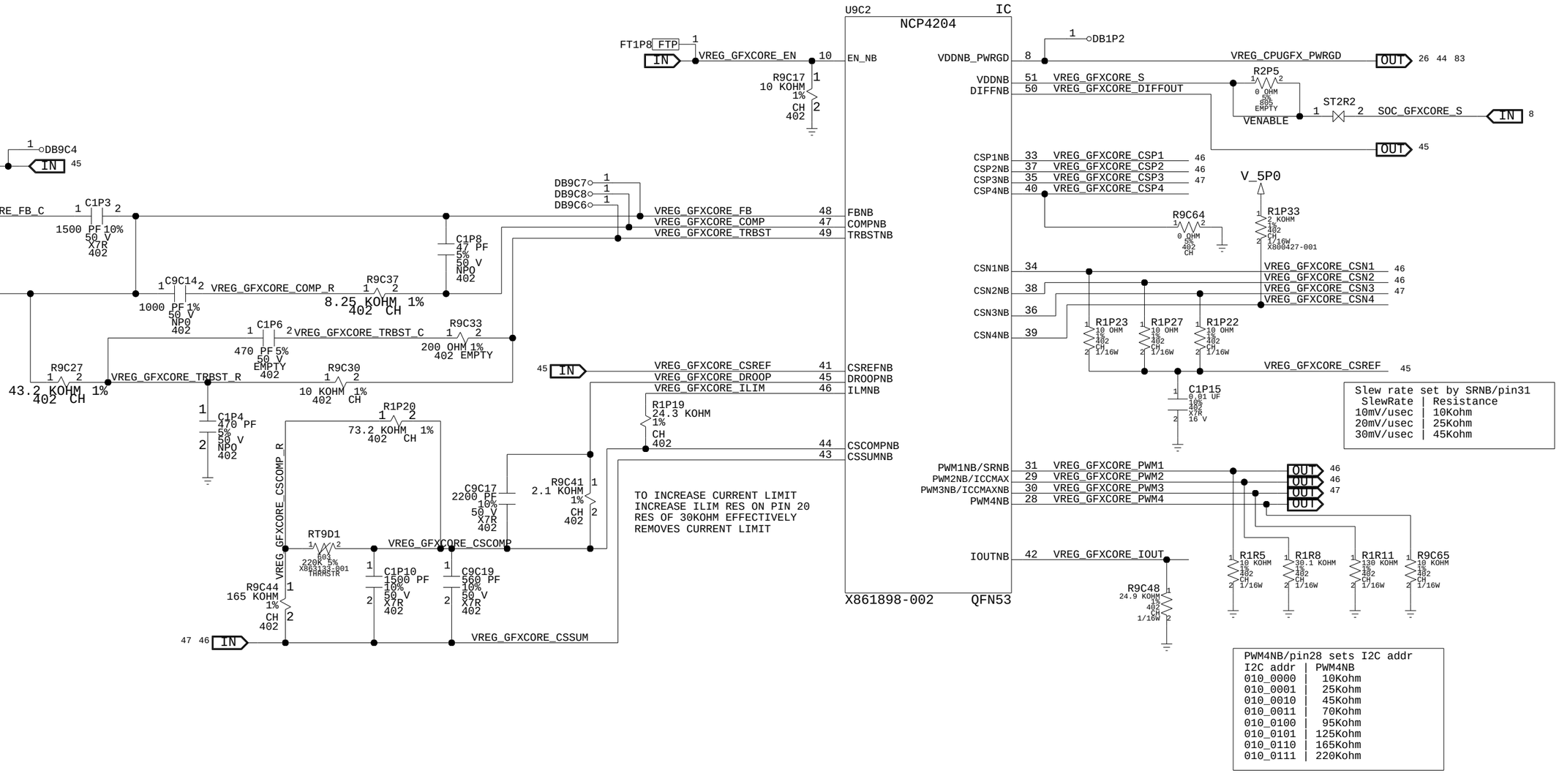

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 43/86 | 43/86 | M | 1.0 |

# VREGS: CPUCORE



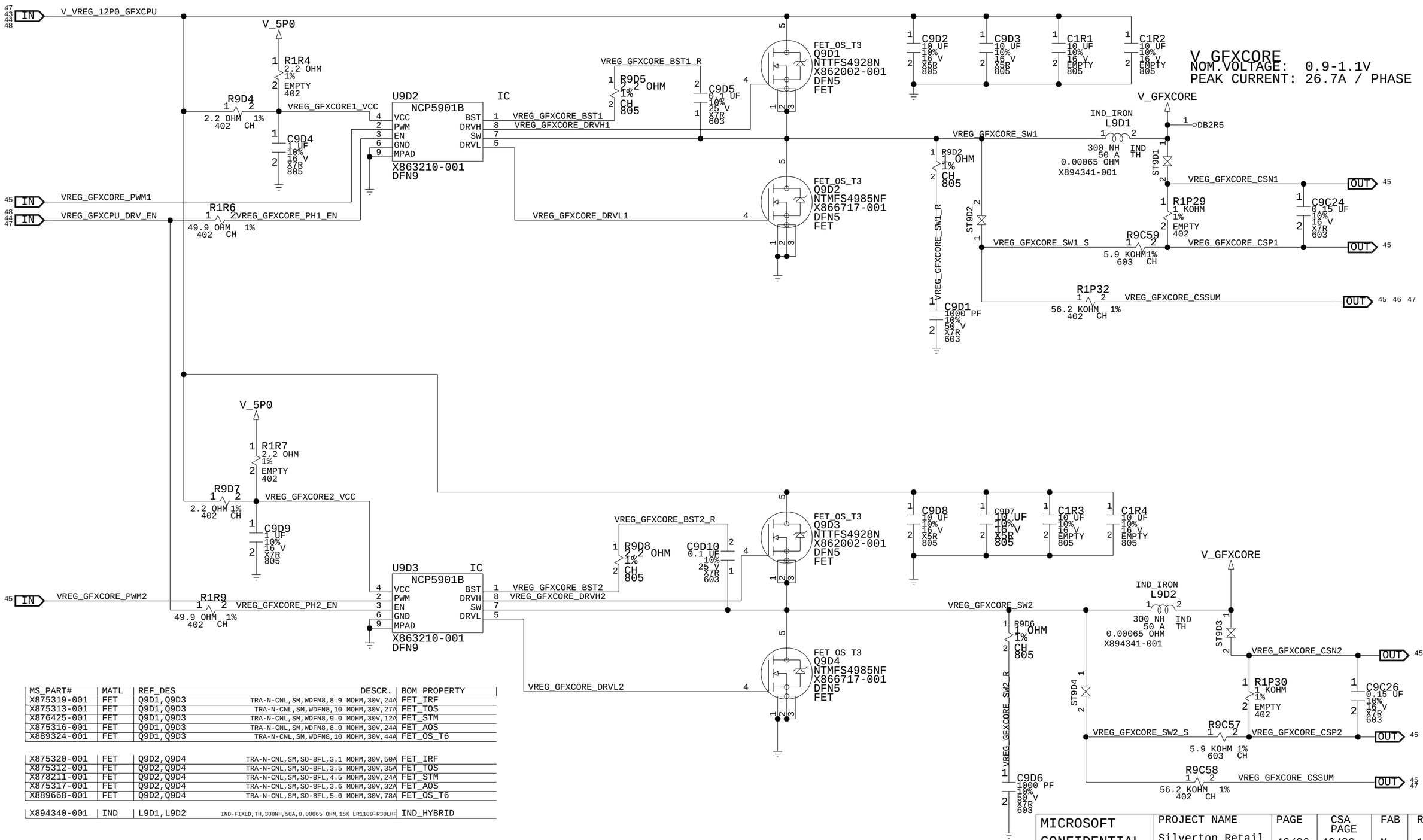

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 44/86 | 44/86 | M | 1.0 |

# VREGS: GFXCORE




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 45/86 | 45/86 | M | 1.0 |

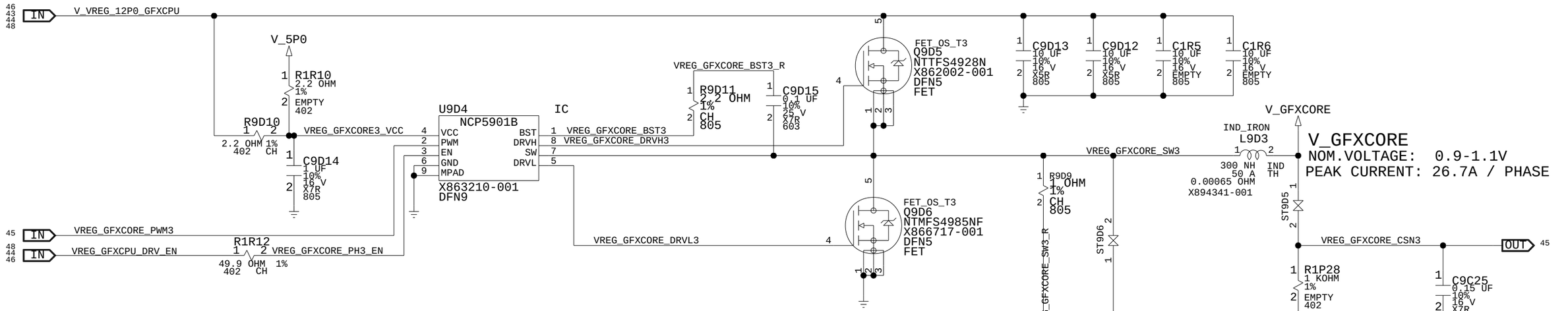
# VREGS: GFXCORE OUTPUT PHASE 1 & 2




| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q9D1,Q9D3 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q9D1,Q9D3 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X876425-001 | FET | Q9D1,Q9D3 | TRA-N-CNL,SM,WDFN8,9.0 MOHM,30V,12A | FET_STM |
| X875316-001 | FET | Q9D1,Q9D3 | TRA-N-CNL,SM,WDFN8,8.0 MOHM,30V,24A | FET_AOS |
| X889324-001 | FET | Q9D1,Q9D3 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |
| X875320-001 | FET | Q9D2,Q9D4 | TRA-N-CNL,SM,SO-8FL,3.1 MOHM,30V,50A | FET_IRF |
| X875312-001 | FET | Q9D2,Q9D4 | TRA-N-CNL,SM,SO-8FL,3.5 MOHM,30V,35A | FET_TOS |
| X878211-001 | FET | Q9D2,Q9D4 | TRA-N-CNL,SM,SO-8FL,4.5 MOHM,30V,24A | FET_STM |
| X875317-001 | FET | Q9D2,Q9D4 | TRA-N-CNL,SM,SO-8FL,3.6 MOHM,30V,32A | FET_AOS |
| X889668-001 | FET | Q9D2,Q9D4 | TRA-N-CNL,SM,SO-8FL,5.0 MOHM,30V,78A | FET_OS_T6 |
| X894340-001 | IND | L9D1,L9D2 | IND-FIXED,TH,300NH,50A,0.00065 OHM,15% LR1109-R30LHF | IND_HYBRID |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 46/86 | 46/86 | M | 1.0 |

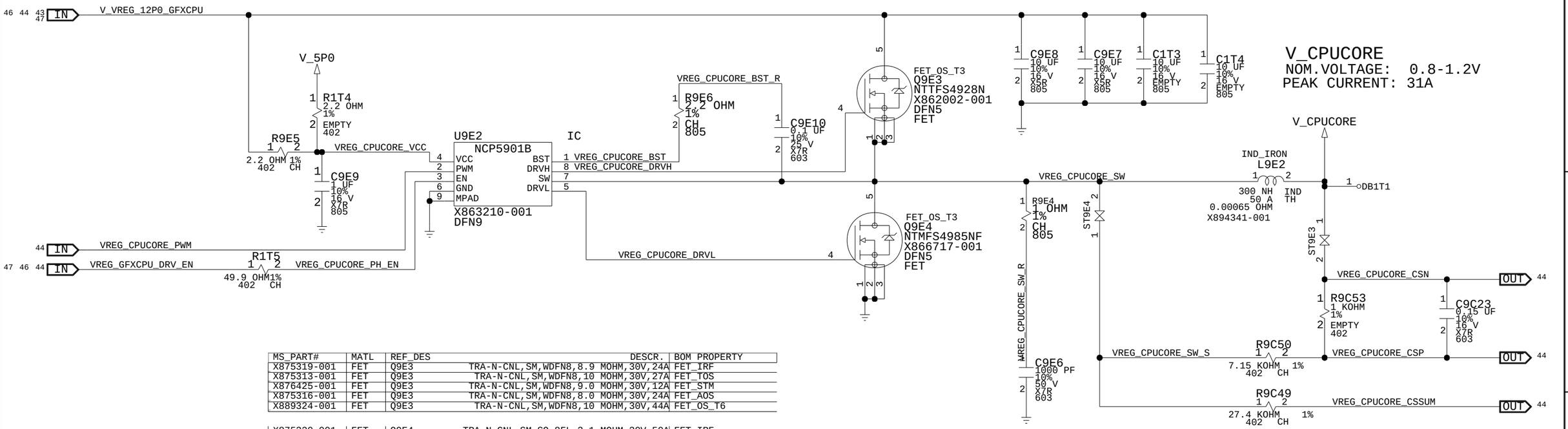
# VREGS: GFXCORE OUTPUT PHASE 3




| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q9D5 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q9D5 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X876425-001 | FET | Q9D5 | TRA-N-CNL,SM,WDFN8,9.0 MOHM,30V,12A | FET_STM |
| X875316-001 | FET | Q9D5 | TRA-N-CNL,SM,WDFN8,8.0 MOHM,30V,24A | FET_AOS |
| X889324-001 | FET | Q9D5 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |
| X875320-001 | FET | Q9D6 | TRA-N-CNL,SM,SO-8FL,3.1 MOHM,30V,50A | FET_IRF |
| X875312-001 | FET | Q9D6 | TRA-N-CNL,SM,SO-8FL,3.5 MOHM,30V,35A | FET_TOS |
| X878211-001 | FET | Q9D6 | TRA-N-CNL,SM,SO-8FL,4.5 MOHM,30V,24A | FET_STM |
| X875317-001 | FET | Q9D6 | TRA-N-CNL,SM,SO-8FL,3.6 MOHM,30V,32A | FET_AOS |
| X889668-001 | FET | Q9D6 | TRA-N-CNL,SM,SO-8FL,5.0 MOHM,30V,78A | FET_OS_T6 |
| X894340-001 | IND | L9D3 | IND-FIXED,TH,300NH,50A,0.00065 OHM,15% LR1109-R30LHF | IND_HYBRID |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 47/86 | 47/86 | M | 1.0 |

# VREGS: CPUCORE OUTPUT PHASE

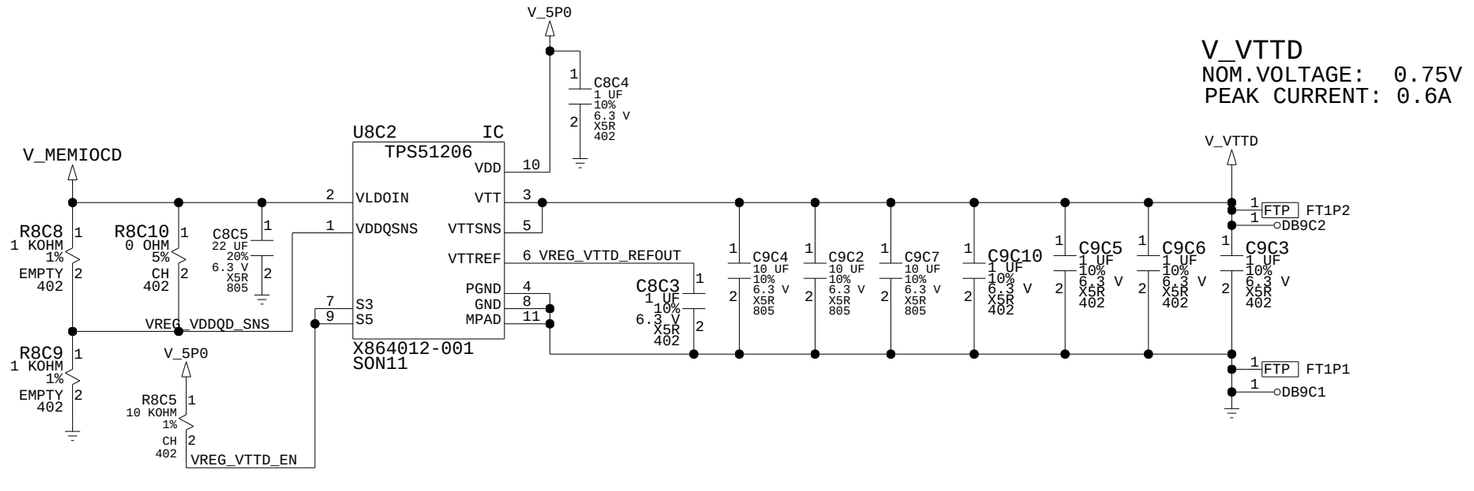



| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q9E3 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q9E3 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X876425-001 | FET | Q9E3 | TRA-N-CNL,SM,WDFN8,9.0 MOHM,30V,12A | FET_STM |
| X875316-001 | FET | Q9E3 | TRA-N-CNL,SM,WDFN8,8.0 MOHM,30V,24A | FET_AOS |
| X889324-001 | FET | Q9E3 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |
| X875320-001 | FET | Q9E4 | TRA-N-CNL,SM,SO-8FL,3.1 MOHM,30V,50A | FET_IRF |
| X875312-001 | FET | Q9E4 | TRA-N-CNL,SM,SO-8FL,3.5 MOHM,30V,35A | FET_TOS |
| X878211-001 | FET | Q9E4 | TRA-N-CNL,SM,SO-8FL,4.5 MOHM,30V,24A | FET_STM |
| X875317-001 | FET | Q9E4 | TRA-N-CNL,SM,SO-8FL,3.6 MOHM,30V,32A | FET_AOS |
| X889668-001 | FET | Q9E4 | TRA-N-CNL,SM,SO-8FL,5.0 MOHM,30V,78A | FET_OS_T6 |
| X894340-001 | IND | L9E2 | IND-FIXED,TH,300NH,50A,0.00065 OHM,15% LR1109-R30LHF | IND_HYBRID |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 48/86 | 48/86 | M | 1.0 |

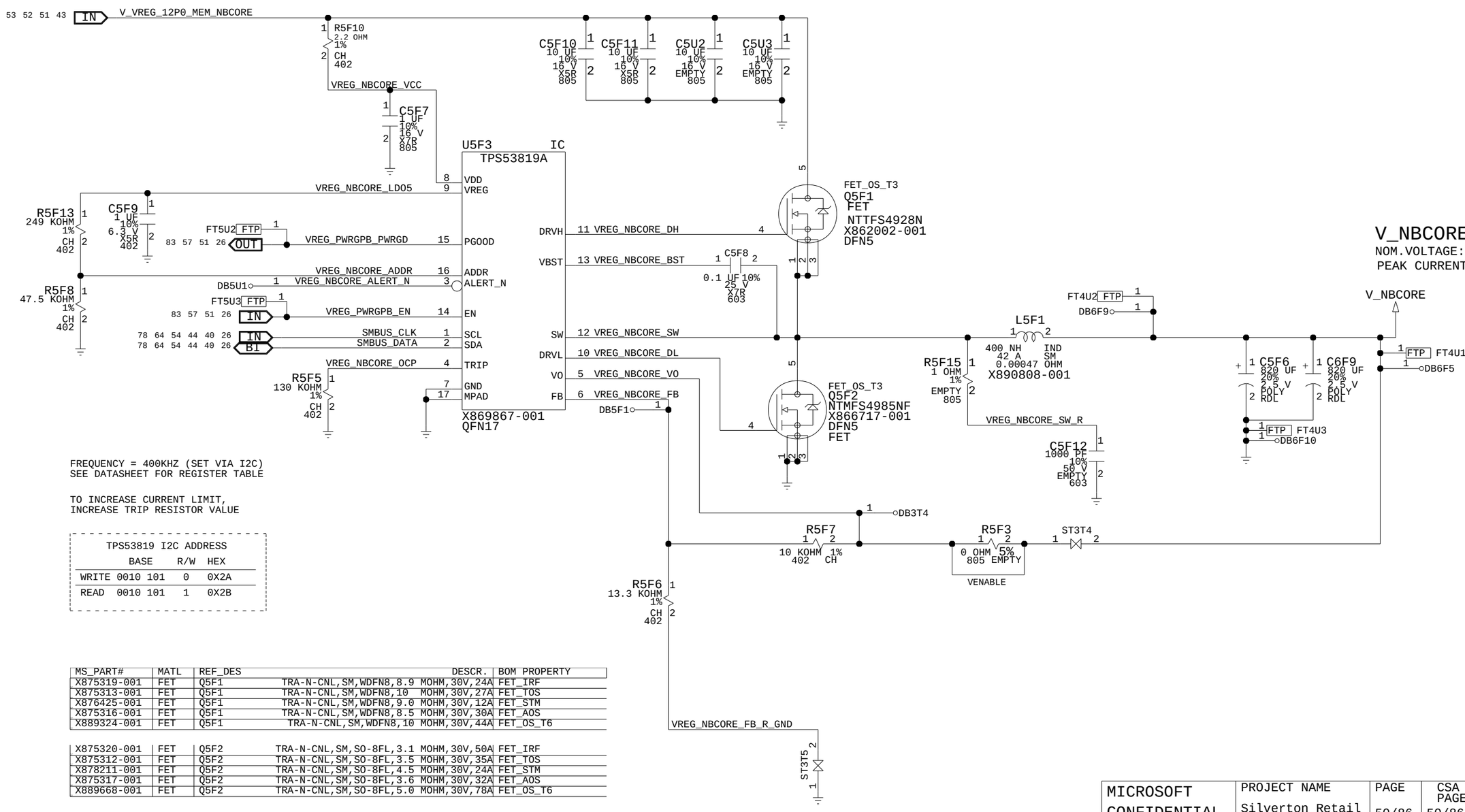
# VREGS: VTT TERMINATION

NOTE: VOSNS SHOULD BE CONNECTED AS A
SEPARATE TRACE FROM VO PATH




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 49/86 | 49/86 | M | 1.0 |

# VREGS: NBCORE




V_NBCORE
NOM.VOLTAGE: 1.05V
PEAK CURRENT: 16A

FREQUENCY = 400KHZ (SET VIA I2C)
SEE DATASHEET FOR REGISTER TABLE

TO INCREASE CURRENT LIMIT,
INCREASE TRIP RESISTOR VALUE

TPS53819 I2C ADDRESS

| | BASE | R/W | HEX |
|---|---|---|---|
| WRITE | 0010 101 | 0 | 0X2A |
| READ | 0010 101 | 1 | 0X2B |

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q5F1 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q5F1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X876425-001 | FET | Q5F1 | TRA-N-CNL,SM,WDFN8,9.0 MOHM,30V,12A | FET_STM |
| X875316-001 | FET | Q5F1 | TRA-N-CNL,SM,WDFN8,8.5 MOHM,30V,30A | FET_AOS |
| X889324-001 | FET | Q5F1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |
| X875320-001 | FET | Q5F2 | TRA-N-CNL,SM,SO-8FL,3.1 MOHM,30V,50A | FET_IRF |
| X875312-001 | FET | Q5F2 | TRA-N-CNL,SM,SO-8FL,3.5 MOHM,30V,35A | FET_TOS |
| X878211-001 | FET | Q5F2 | TRA-N-CNL,SM,SO-8FL,4.5 MOHM,30V,24A | FET_STM |
| X875317-001 | FET | Q5F2 | TRA-N-CNL,SM,SO-8FL,3.6 MOHM,30V,32A | FET_AOS |
| X889668-001 | FET | Q5F2 | TRA-N-CNL,SM,SO-8FL,5.0 MOHM,30V,78A | FET_OS_T6 |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 50/86 | 50/86 | M | 1.0 |

# VREGS: MEMCORE

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875319-001 | FET | Q5E1 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30V,24A | FET_IRF |
| X875313-001 | FET | Q5E1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,27A | FET_TOS |
| X876425-001 | FET | Q5E1 | TRA-N-CNL,SM,WDFN8,9.0 MOHM,30V,12A | FET_STM |
| X875316-001 | FET | Q5E1 | TRA-N-CNL,SM,WDFN8,8.5 MOHM,30V,30A | FET_AOS |
| X889324-001 | FET | Q5E1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30V,44A | FET_OS_T6 |

| | | | | |
|---|---|---|---|---|
| X875318-001 | FET | Q5E2 | TRA-N-CNL,SM,WDFN8,6.3 MOHM,30V,24A | FET_IRF |
| X875314-001 | FET | Q5E2 | TRA-N-CNL,SM,WDFN8,5.4 MOHM,30V,27A | FET_TOS |
| X876423-001 | FET | Q5E2 | TRA-N-CNL,SM,WDFN8,4.5 MOHM,30V,17A | FET_STM |
| X875315-001 | FET | Q5E2 | TRA-N-CNL,SM,WDFN8,8.8 MOHM,30V,24A | FET_AOS |
| X889325-001 | FET | Q5E2 | TRA-N-CNL,SM,WDFN8,7.4 MOHM,30V,52A | FET_OS_T6 |

V_MEMCORE
DUAL SETPOINT VR
V_HI = 1.2V V_LO = 0.95V
PEAK CURRENT: 8A

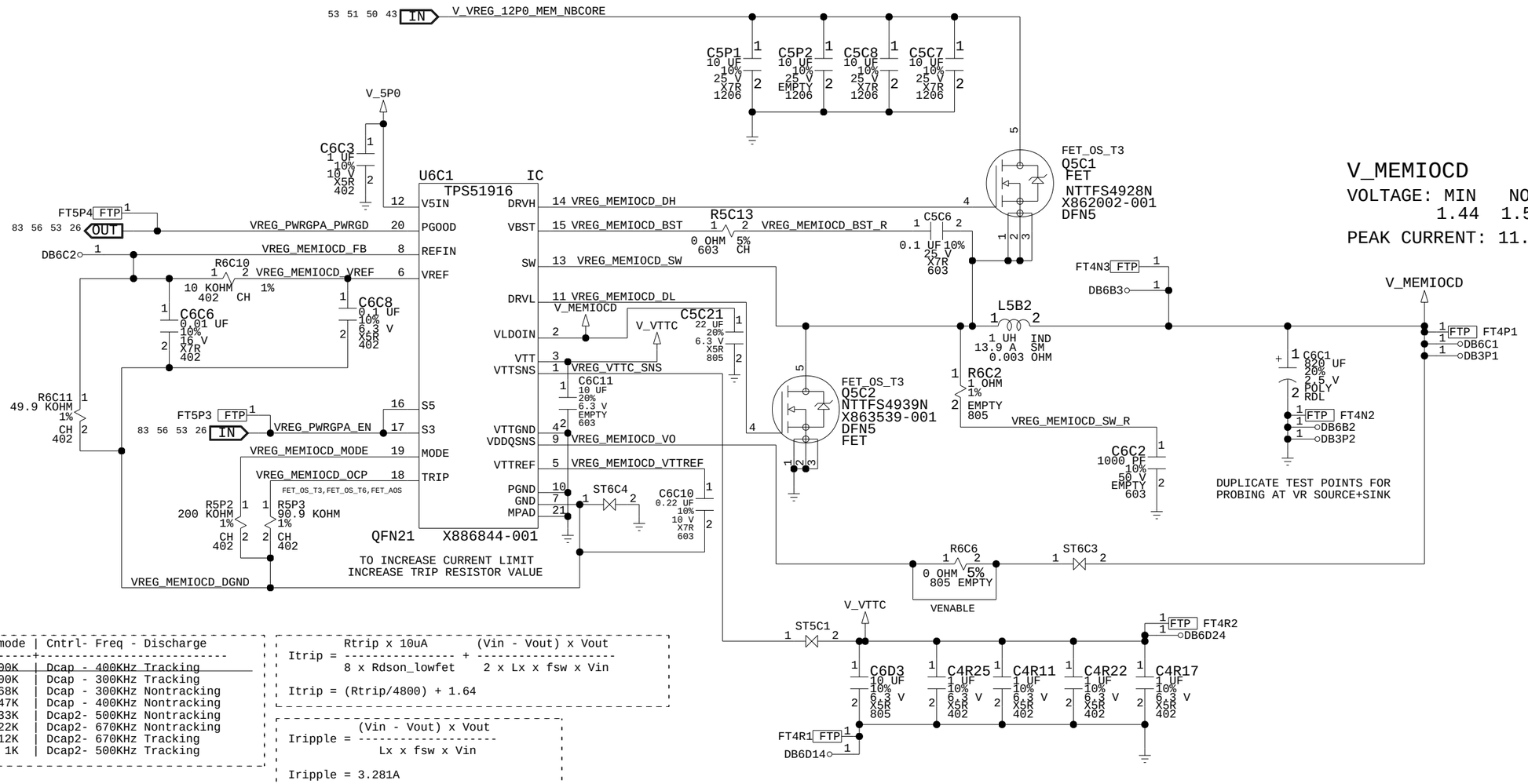
ST5E2 IS OUTPUT VOLTAGE SENSE RETURN.
PLACE NEAR ST5E1 AND CONNECT TO GND PLANE

| FREQUENCY SETTING | |
|---|---|
| R5E42 | FSW |
| 2K | 300KHZ |
| 6K | 400KHZ |
| -->15K | 600KHZ |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 51/86 | 51/86 | M | 1.0 |

# VREG: MEMIOCD

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X853425-001 | CH | R5P3 | RES-FXD,SM, 113 KOHM, 1%, 402 | FET_IRF |
| X814857-001 | CH | R5P3 | RES-FXD,SM, 84.5 KOHM, 1%,402 | FET_TOS |
| X814857-001 | CH | R5P3 | RES-FXD,SM, 84.5 KOHM, 1%,402 | FET_STM |
| X875319-001 | FET | Q5C1 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30 V,24 A | FET_IRF |
| X875313-001 | FET | Q5C1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,27 A | FET_TOS |
| X876425-001 | FET | Q5C1 | TRA-N-CNL,SM,WDFN8,9.0 MOHM,30 V,12 A | FET_STM |
| X875316-001 | FET | Q5C1 | TRA-N-CNL,SM,WDFN8,8.5 MOHM,30 V,30 A | FET_AOS |
| X889324-001 | FET | Q5C1 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,44 A | FET_OS_T6 |
| X875318-001 | FET | Q5C2 | TRA-N-CNL,SM,WDFN8,6.3 MOHM,30 V,24 A | FET_IRF |
| X875314-001 | FET | Q5C2 | TRA-N-CNL,SM,WDFN8,5.4 MOHM,30 V,27 A | FET_TOS |
| X876423-001 | FET | Q5C2 | TRA-N-CNL,SM,WDFN8,4.5 MOHM,30 V,17 A | FET_STM |
| X875315-001 | FET | Q5C2 | TRA-N-CNL,SM,WDFN8,8.8 MOHM,30 V,24 A | FET_AOS |
| X889325-001 | FET | Q5C2 | TRA-N-CNL,SM,WDFN8,7.4 MOHM,30 V,52 A | FET_OS_T6 |




V_MEMIOCD

VOLTAGE: MIN NOM MAX
1.44 1.50 1.56

PEAK CURRENT: 11.2A

| Rmode | Cntrl- Freq - Discharge |
|---|---|
| 200K | Dcap - 400KHz Tracking |
| 100K | Dcap - 300KHz Tracking |
| 68K | Dcap - 300KHz Nontracking |
| 47K | Dcap - 400KHz Nontracking |
| 33K | Dcap2- 500KHz Nontracking |
| 22K | Dcap2- 670KHz Nontracking |
| 12K | Dcap2- 670KHz Tracking |
| 1K | Dcap2- 500KHz Tracking |

400KHZ

$$Itrip = \frac{Rtrip \times 10uA}{8 \times Rdson_lowfet} + \frac{(Vin - Vout) \times Vout}{2 \times Lx \times fsw \times Vin}$$

$$Itrip = (Rtrip/4800) + 1.64$$

$$Iripple = \frac{(Vin - Vout) \times Vout}{Lx \times fsw \times Vin}$$

$$Iripple = 3.281A$$

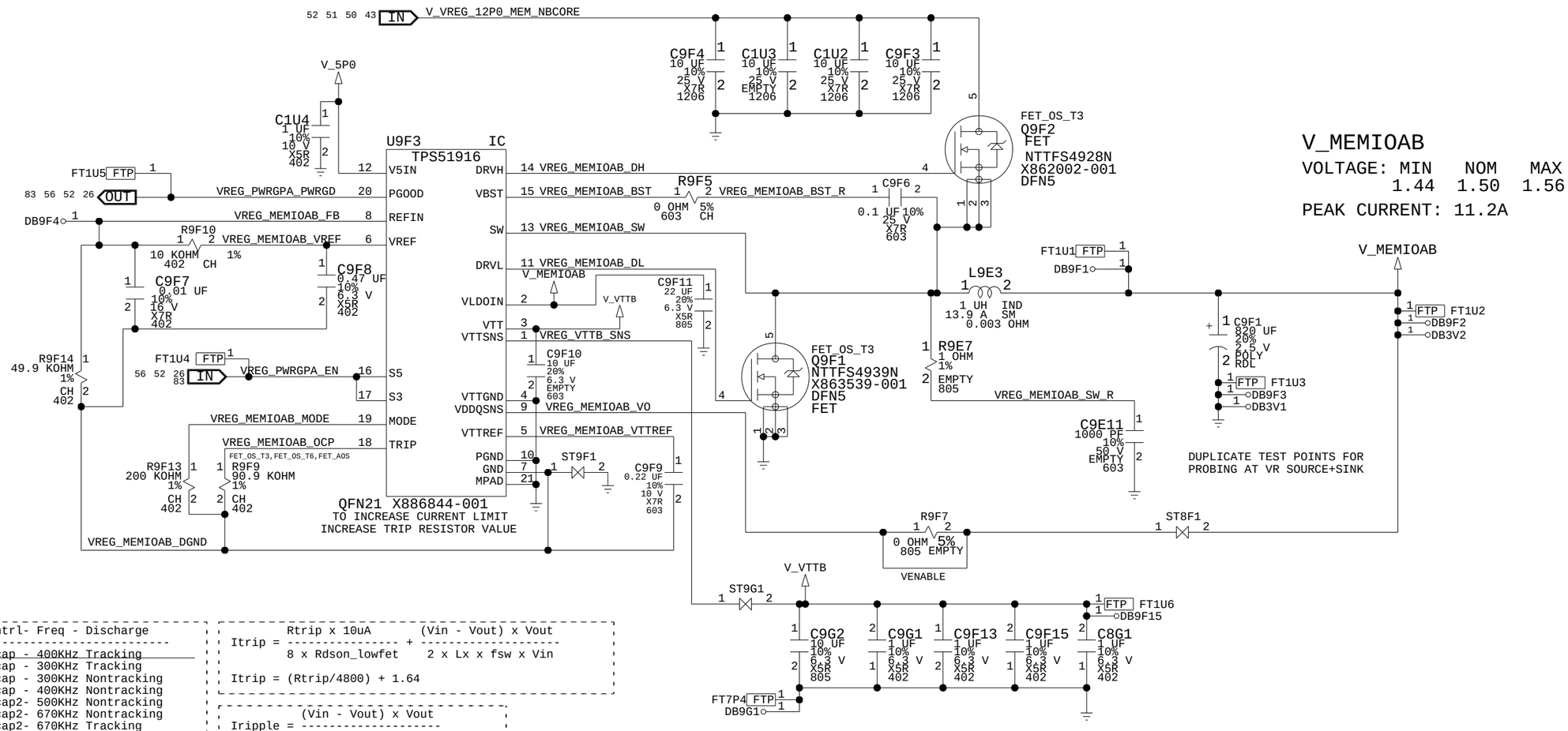
$$Vout = \frac{1.8 \times R2}{R1 + R2} + \frac{Iripple \times ESR}{2}$$

$$Vout = 1.8\ R2/(R1+R2) + 0.010$$

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 52/86 | 52/86 | M | 1.0 |

# VREG: MEMIOAB

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X853425-001 | CH | R9F9 | RES-FXD,SM, 113 KOHM, 1%, 402 | FET_IRF |
| X814857-001 | CH | R9F9 | RES-FXD,SM, 84.5 KOHM, 1%,402 | FET_TOS |
| X814857-001 | CH | R9F9 | RES-FXD,SM, 84.5 KOHM, 1%,402 | FET_STM |
| X875319-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,8.9 MOHM,30 V,24 A | FET_IRF |
| X875313-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,27 A | FET_TOS |
| X876425-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,9.0 MOHM,30 V,12 A | FET_STM |
| X875316-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,8.5 MOHM,30 V,30 A | FET_AOS |
| X889324-001 | FET | Q9F2 | TRA-N-CNL,SM,WDFN8,10 MOHM,30 V,44 A | FET_OS_T6 |
| X875318-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,6.3 MOHM,30 V,24 A | FET_IRF |
| X875314-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,5.4 MOHM,30 V,27 A | FET_TOS |
| X876423-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,4.5 MOHM,30 V,17 A | FET_STM |
| X875315-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,8.8 MOHM,30 V,24 A | FET_AOS |
| X889325-001 | FET | Q9F1 | TRA-N-CNL,SM,WDFN8,7.4 MOHM,30 V,52 A | FET_OS_T6 |




**V_MEMIOAB**

VOLTAGE: MIN NOM MAX
1.44 1.50 1.56

PEAK CURRENT: 11.2A

| Rmode | Cntrl- Freq - Discharge |
|---|---|
| 200K | Dcap - 400KHz Tracking |
| 100K | Dcap - 300KHz Tracking |
| 68K | Dcap - 300KHz Nontracking |
| 47K | Dcap - 400KHz Nontracking |
| 33K | Dcap2- 500KHz Nontracking |
| 22K | Dcap2- 670KHz Nontracking |
| 12K | Dcap2- 670KHz Tracking |
| 1K | Dcap2- 500KHz Tracking |

400KHZ

$$Itrip = \frac{Rtrip \times 10uA}{8 \times Rdson_lowfet} + \frac{(Vin - Vout) \times Vout}{2 \times Lx \times fsw \times Vin}$$

Itrip = (Rtrip/4800) + 1.64

$$Iripple = \frac{(Vin - Vout) \times Vout}{Lx \times fsw \times Vin}$$

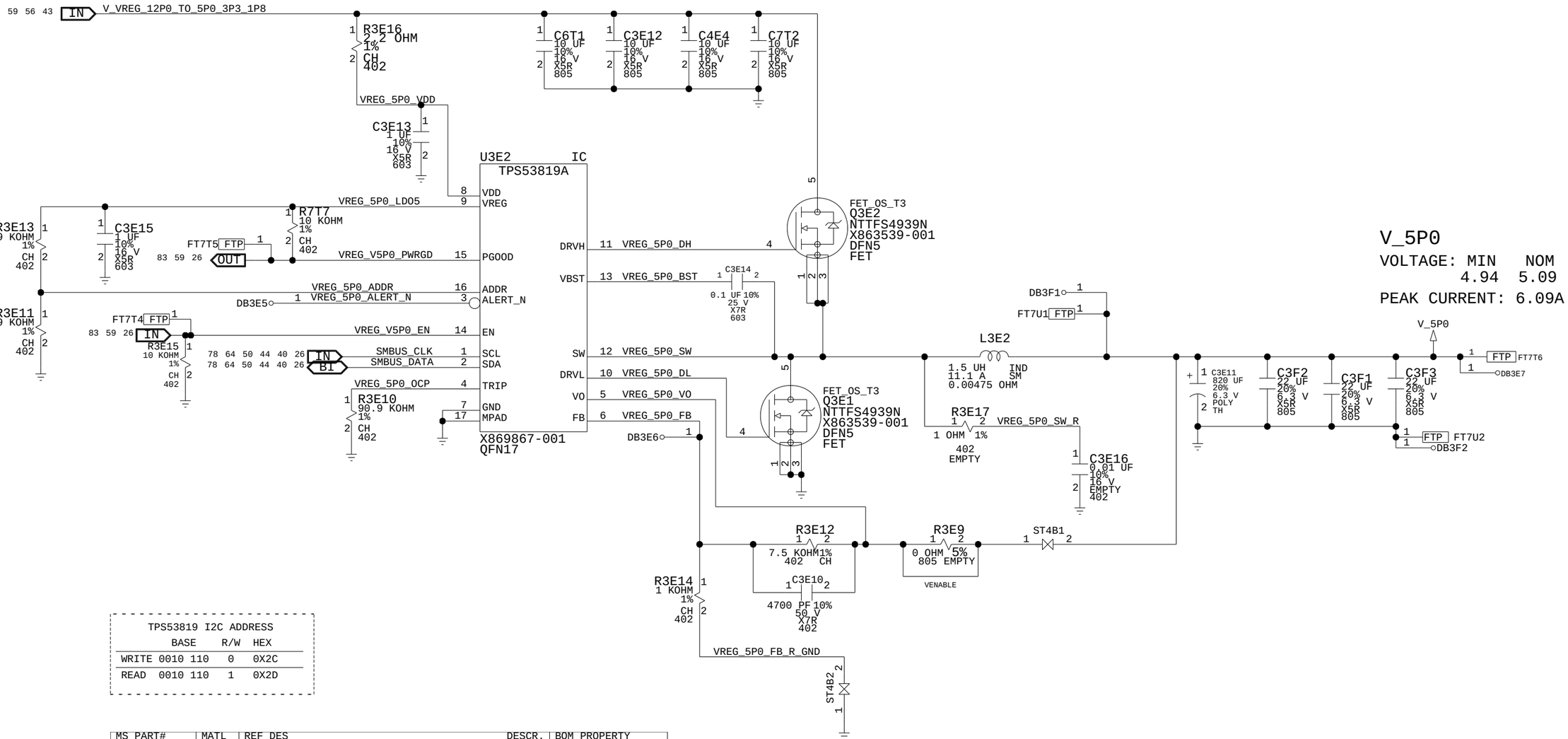
Iripple = 3.281A

$$Vout = \frac{1.8 \times R2}{R1 + R2} + \frac{Iripple \times ESR}{2}$$

Vout = 1.8 R2/(R1+R2) + 0.010

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 53/86 | 53/86 | M | 1.0 |

# VREGS: V5P0




V_5P0

VOLTAGE: MIN NOM MAX
4.94 5.09 5.24

PEAK CURRENT: 6.09A

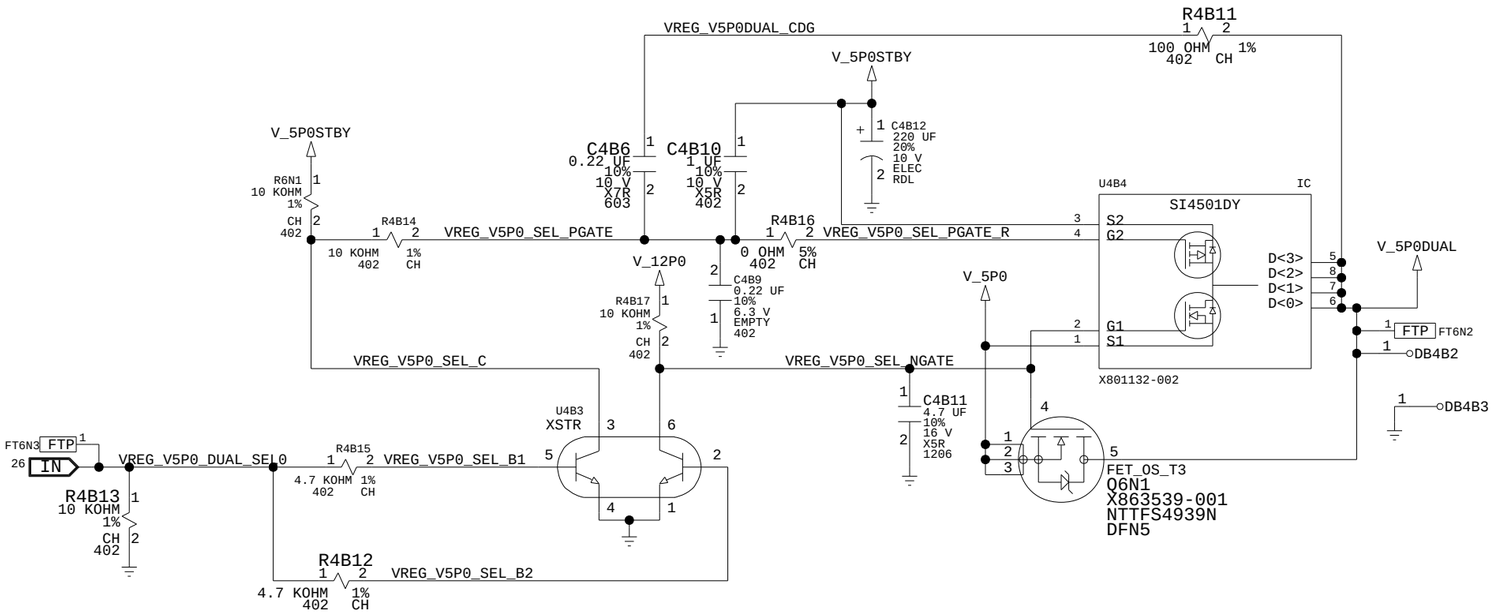
TPS53819 I2C ADDRESS

| | BASE | R/W | HEX |
|---|---|---|---|
| WRITE | 0010 110 | 0 | 0X2C |
| READ | 0010 110 | 1 | 0X2D |

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875318-001 | FET | Q3E1,Q3E2 | TRA-N-CNL,SM,WDFN8,6.3 MOHM,30V,24A | FET_IRF |
| X875314-001 | FET | Q3E1,Q3E2 | TRA-N-CNL,SM,WDFN8,5.4 MOHM,30V,27A | FET_TOS |
| X876423-001 | FET | Q3E1,Q3E2 | TRA-N-CNL,SM,WDFN8,4.5 MOHM,30V,17A | FET_STM |
| X875315-001 | FET | Q3E1,Q3E2 | TRA-N-CNL,SM,WDFN8,5.0 MOHM,30V,30A | FET_AOS |
| X889325-001 | FET | Q3E1,Q3E2 | TRA-N-CNL,SM,WDFN8,7.4 MOHM,30V,52A | FET_OS_T6 |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 54/86 | 54/86 | M | 1.0 |

# VREGS: V5P0 DUAL



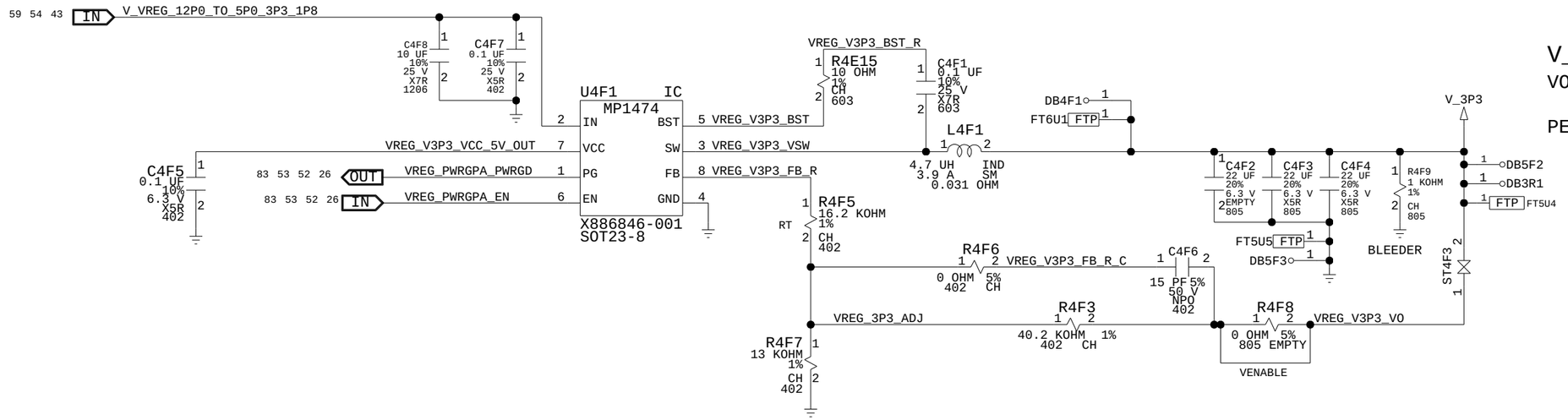

**V_5P0DUAL**

VOLTAGE: MIN NOM MAX
4.80 5.09 5.25
PEAK CURRENT: 6.09A

| SEL | NGATE | PGATE | V_5P0DUAL SOURCE |
|---|---|---|---|
| HIGH | GND | LOW | PFET_ON = V_5P0STBY |
| LOW | 12V | 5V | NFET_ON = V_5P0 |

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X875318-001 | FET | Q6N1 | TRA-N-CNL,SM,WDFN8,6.3 MOHM,30V,24A | FET_IRF |
| X875314-001 | FET | Q6N1 | TRA-N-CNL,SM,WDFN8,5.4 MOHM,30V,27A | FET_TOS |
| X876423-001 | FET | Q6N1 | TRA-N-CNL,SM,WDFN8,4.5 MOHM,30V,17A | FET_STM |
| X875315-001 | FET | Q6N1 | TRA-N-CNL,SM,WDFN8,5.0 MOHM,30V,30A | FET_AOS |
| X889325-001 | FET | Q6N1 | TRA-N-CNL,SM,WDFN8,7.4 MOHM,30V,52A | FET_OS_T6 |

# VREGS: V3P3




V_3P3

VOLTAGE: MIN NOM MAX
3.19 3.30 3.42

PEAK CURRENT: 0.86A

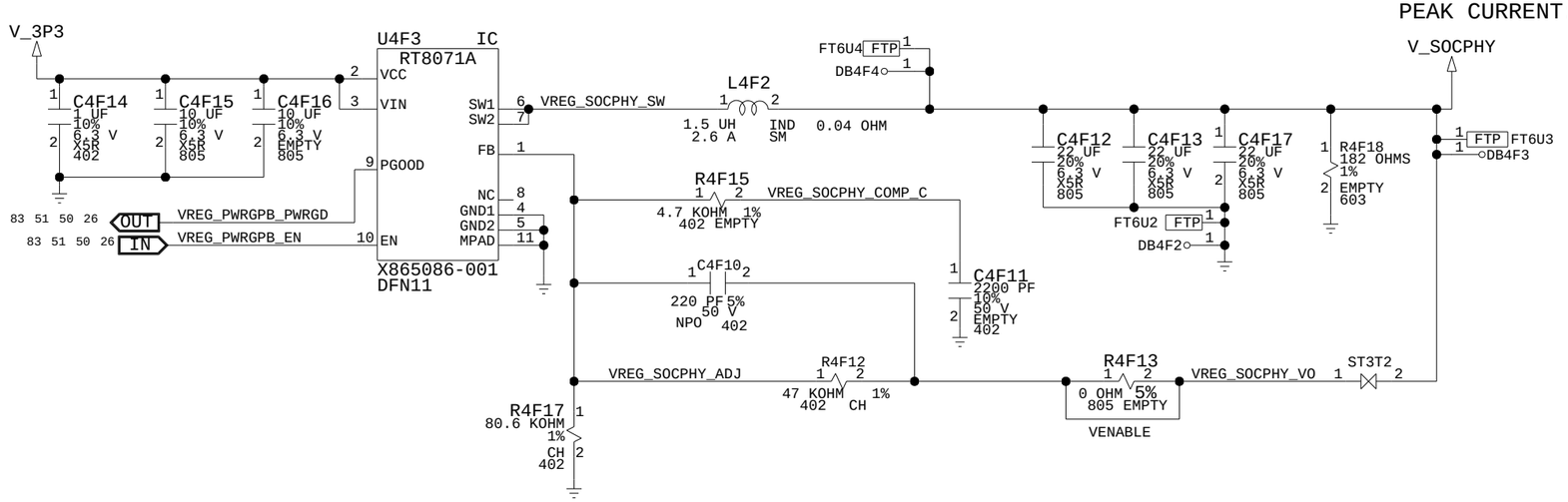
Vout = 0.807(1+R1/R2)

RT RESISTOR ADDED PER VENDOR RECOMMENDATION

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 56/86 | 56/86 | M | 1.0 |

# VREGS: VSOCPHY/VFUSE

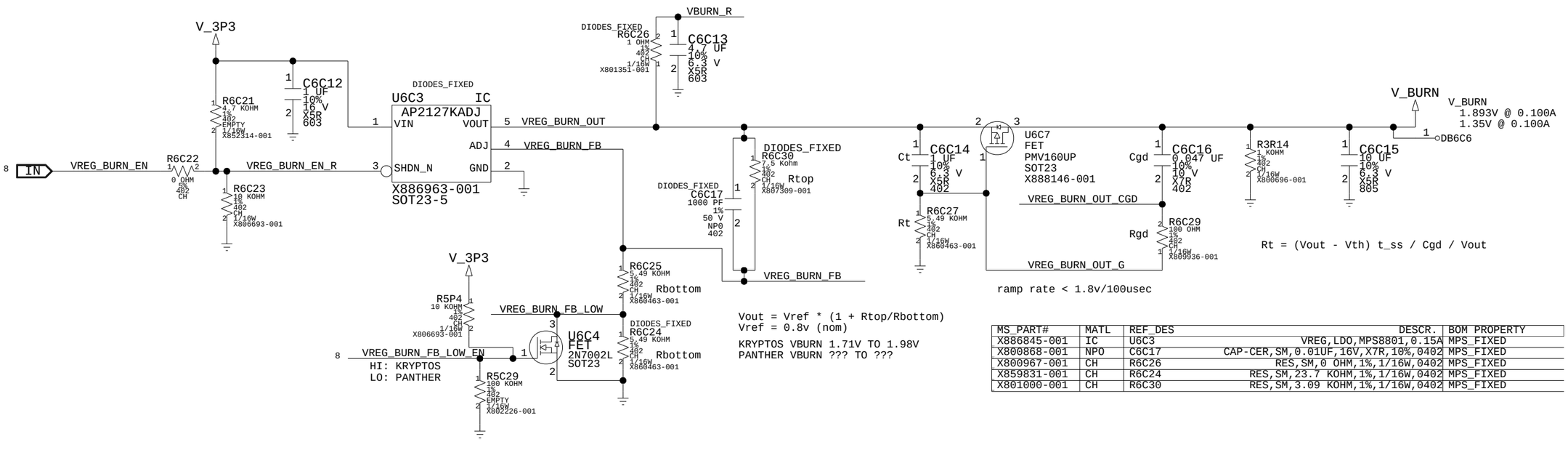
V_SOCPHY
VOLTAGE: MIN NOM MAX
0.92 0.95 0.98
PEAK CURRENT: 1.32A



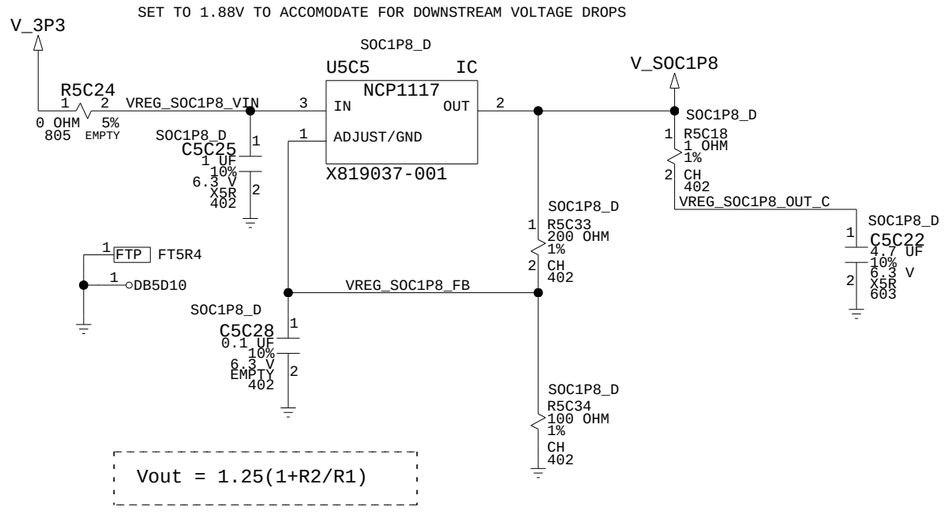

Vout = 0.6(1+R1/R2)

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 57/86 | 57/86 | M | 1.0 |

# VREGS: VBURN

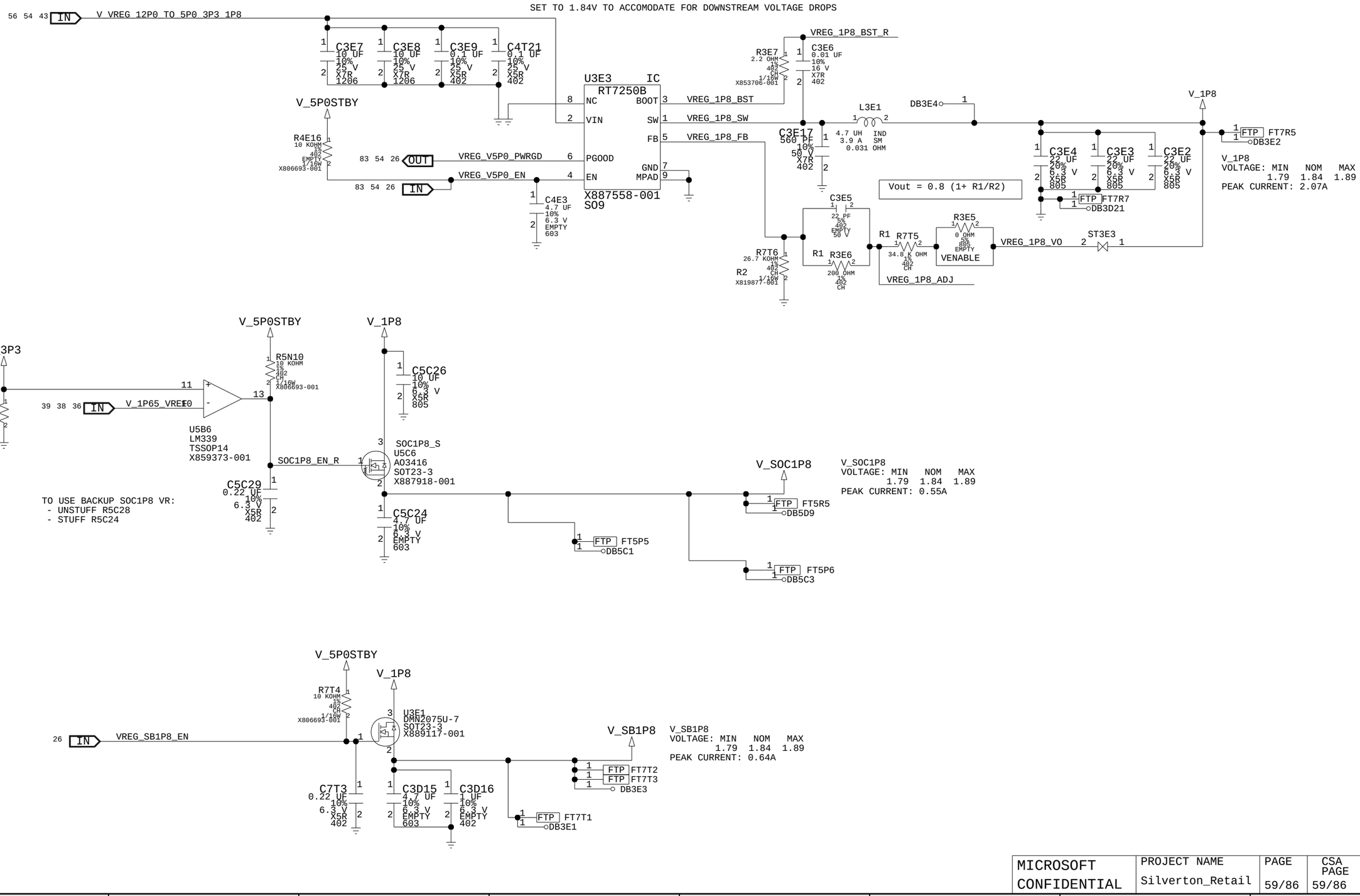



| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X886845-001 | IC | U6C3 | VREG,LDO,MPS8801,0.15A | MPS_FIXED |
| X800868-001 | NPO | C6C17 | CAP-CER,SM,0.01UF,16V,X7R,10%,0402 | MPS_FIXED |
| X800967-001 | CH | R6C26 | RES,SM,0 OHM,1%,1/16W,0402 | MPS_FIXED |
| X859831-001 | CH | R6C24 | RES,SM,23.7 KOHM,1%,1/16W,0402 | MPS_FIXED |
| X801000-001 | CH | R6C30 | RES,SM,3.09 KOHM,1%,1/16W,0402 | MPS_FIXED |



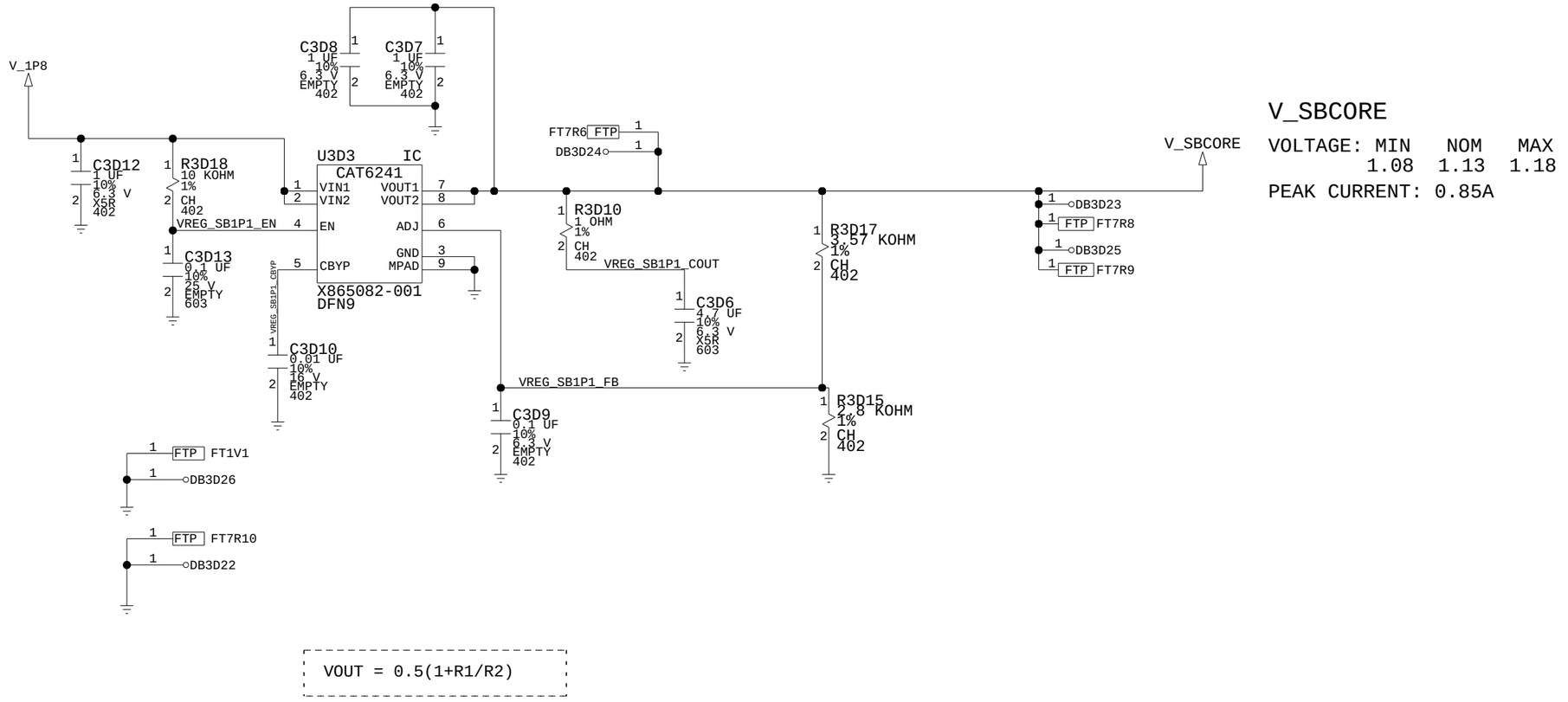

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 58/86 | 58/86 | M | 1.0 |

# VREGS: V_1P8, V_SOC1P8, V_SB1P8




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 59/86 | 59/86 | M | 1.0 |

# VREGS: V_SBCORE




## V_SBCORE

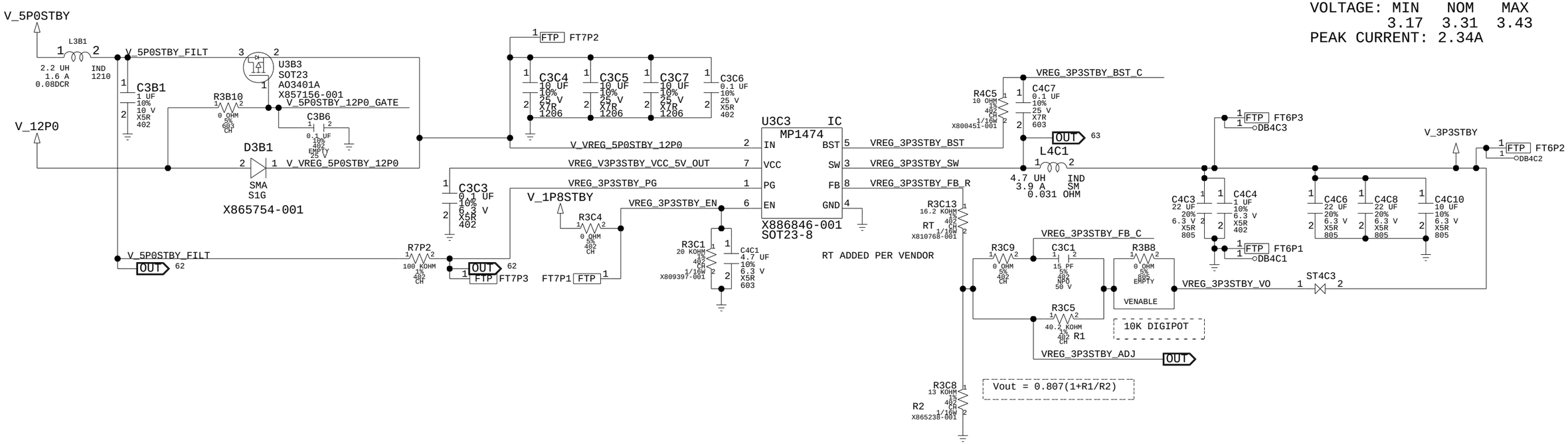
VOLTAGE: MIN NOM MAX
1.08 1.13 1.18

PEAK CURRENT: 0.85A

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 60/86 | 60/86 | M | 1.0 |

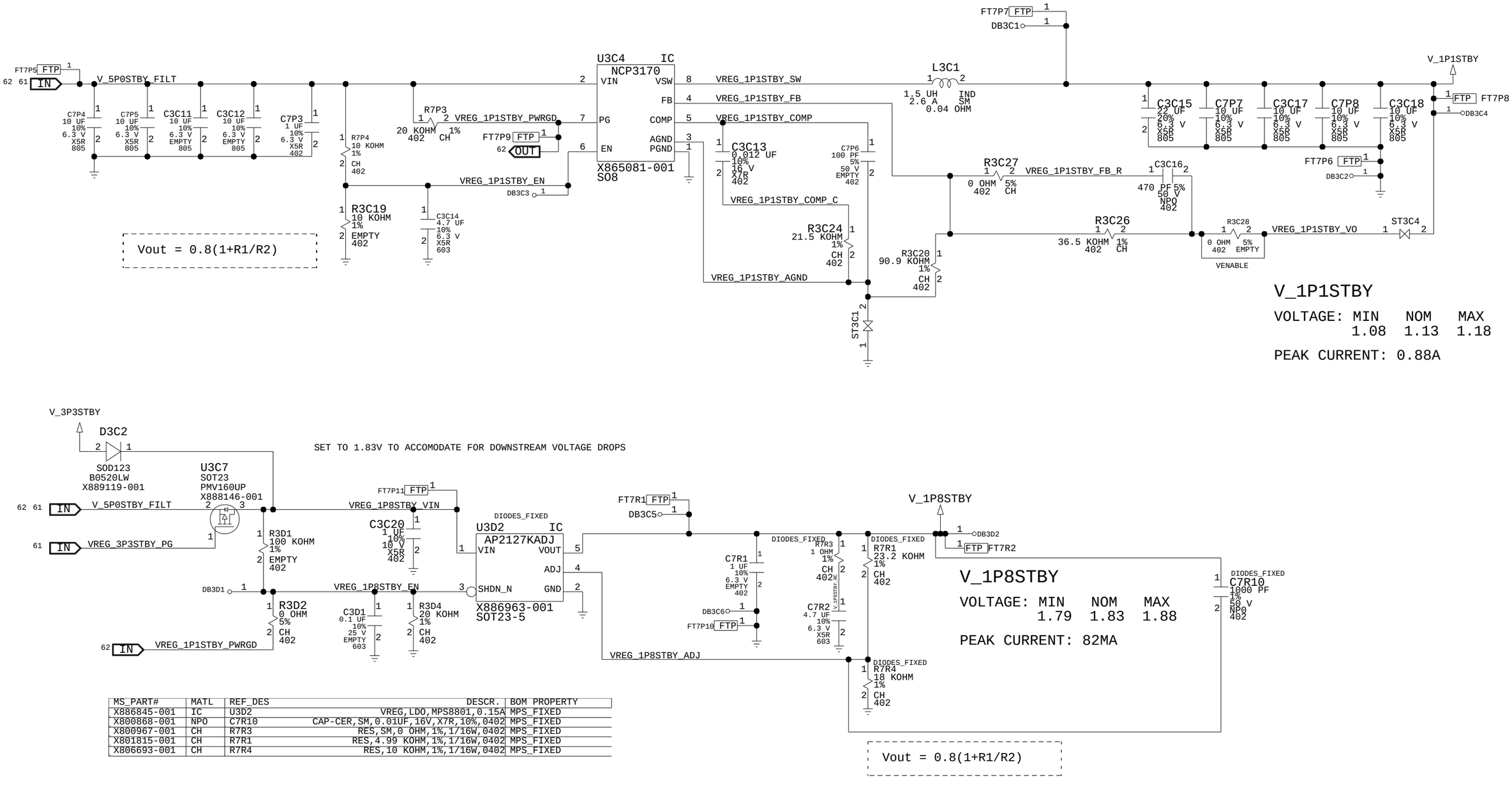
# VREGS: V3P3 STANDBY

V_3P3STBY
VOLTAGE: MIN NOM MAX
3.17 3.31 3.43
PEAK CURRENT: 2.34A




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 61/86 | 61/86 | M | 1.0 |

# VREGS: V1P1 STANDBY, V1P8 STANDBY



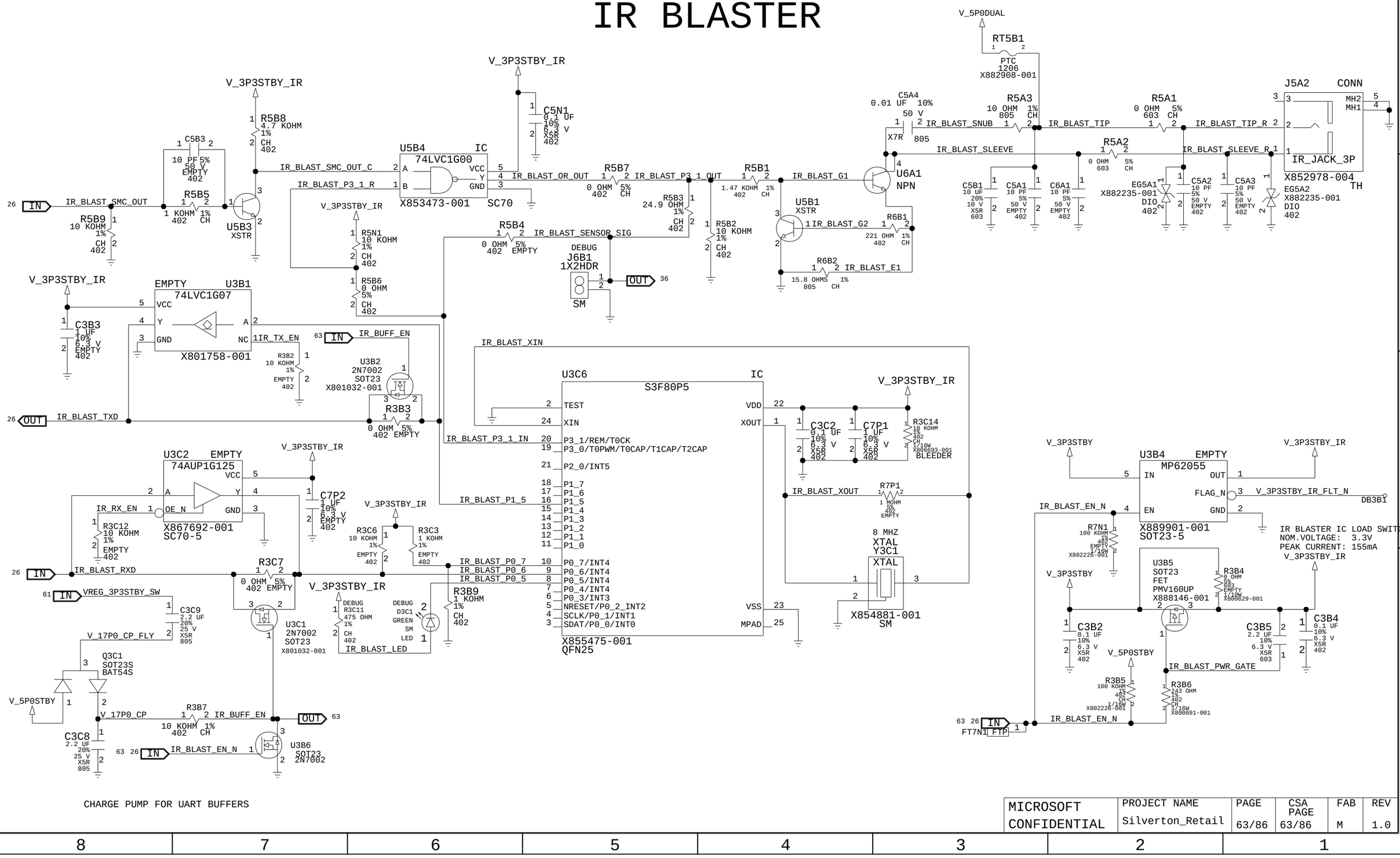




| MS_PART# | MATL | REF_DES | DESCR. | BOM_PROPERTY |
|---|---|---|---|---|
| X886845-001 | IC | U3D2 | VREG,LDO,MPS8801,0.15A | MPS_FIXED |
| X800868-001 | NPO | C7R10 | CAP-CER,SM,0.01UF,16V,X7R,10%,0402 | MPS_FIXED |
| X800967-001 | CH | R7R3 | RES,SM,0 OHM,1%,1/16W,0402 | MPS_FIXED |
| X801815-001 | CH | R7R1 | RES,4.99 KOHM,1%,1/16W,0402 | MPS_FIXED |
| X806693-001 | CH | R7R4 | RES,10 KOHM,1%,1/16W,0402 | MPS_FIXED |

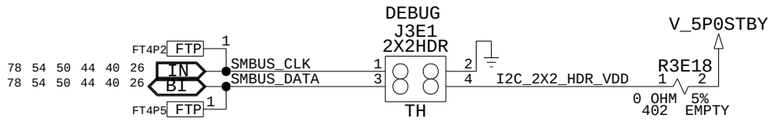
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 62/86 | 62/86 | M | 1.0 |

# IR BLASTER




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 63/86 | 63/86 | M | 1.0 |

# I2C




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 64/86 | 64/86 | M | 1.0 |

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|---|---|---|---|---|---|
| | Silverton_Retail | 65/86 | 65/86 | M | 1.0 |

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| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 66/86 | 66/86 | M | 1.0 |

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| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 70/86 | 70/86 | M | 1.0 |

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| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 71/86 | 71/86 | M | 1.0 |

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| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 74/86 | 74/86 | M | 1.0 |

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| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 75/86 | 75/86 | M | 1.0 |

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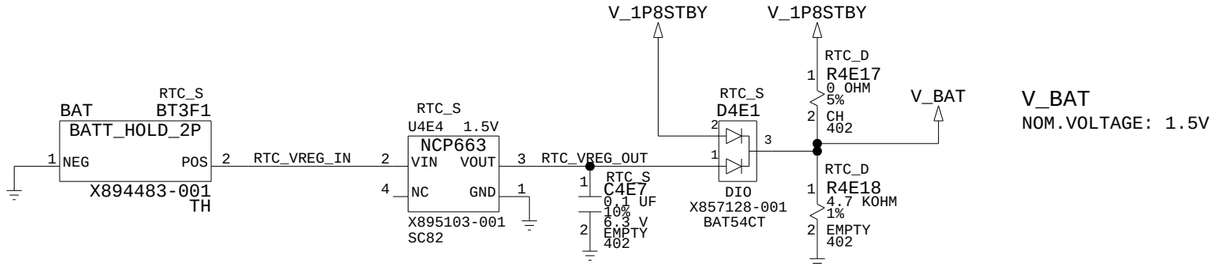
| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 76/86 | 76/86 | M | 1.0 |

# V_BAT

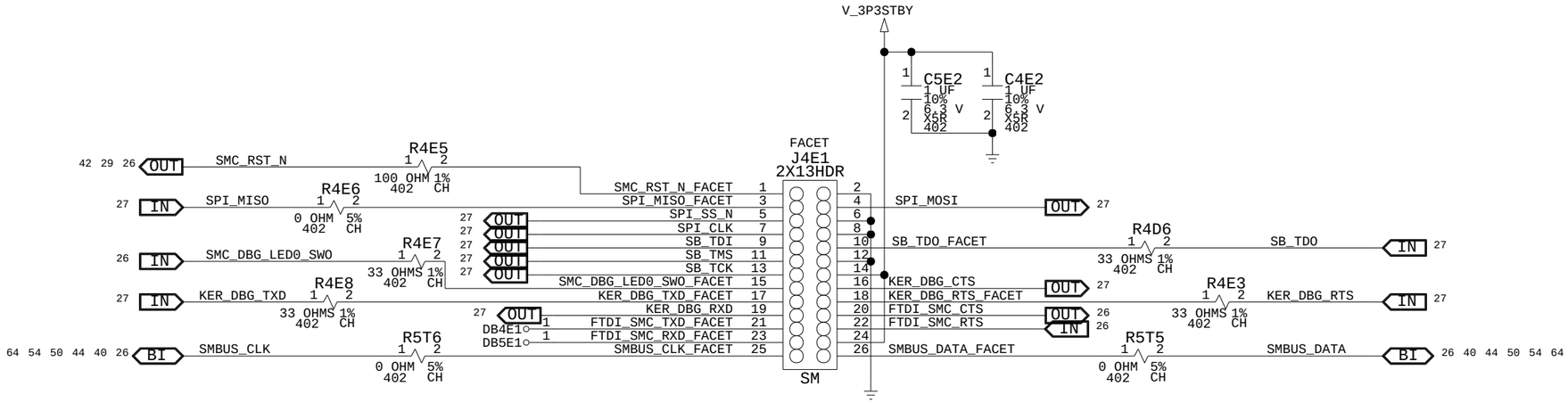



V_BAT
NOM.VOLTAGE: 1.5V

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X893242-001 | BAT | COIN_CELL1 | COIN CELL,LITHIUM,3V,2032 | RTC_S |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 77/86 | 77/86 | M | 1.0 |

# CONN: FACET BOARD




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 78/86 | 78/86 | M | 1.0 |

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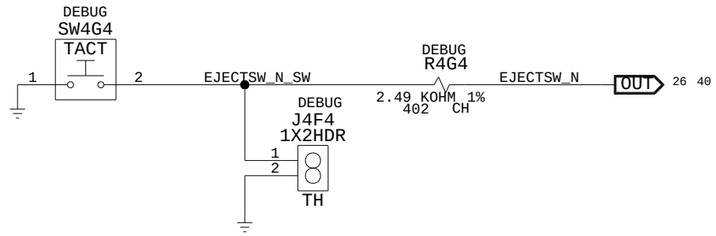
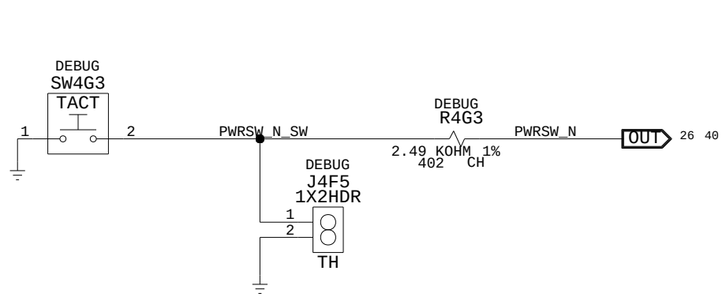
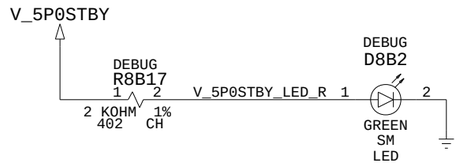
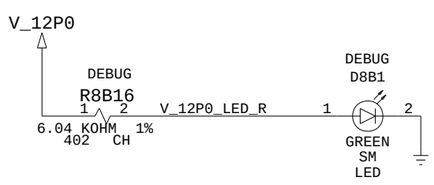
# CONN: SWITCHES



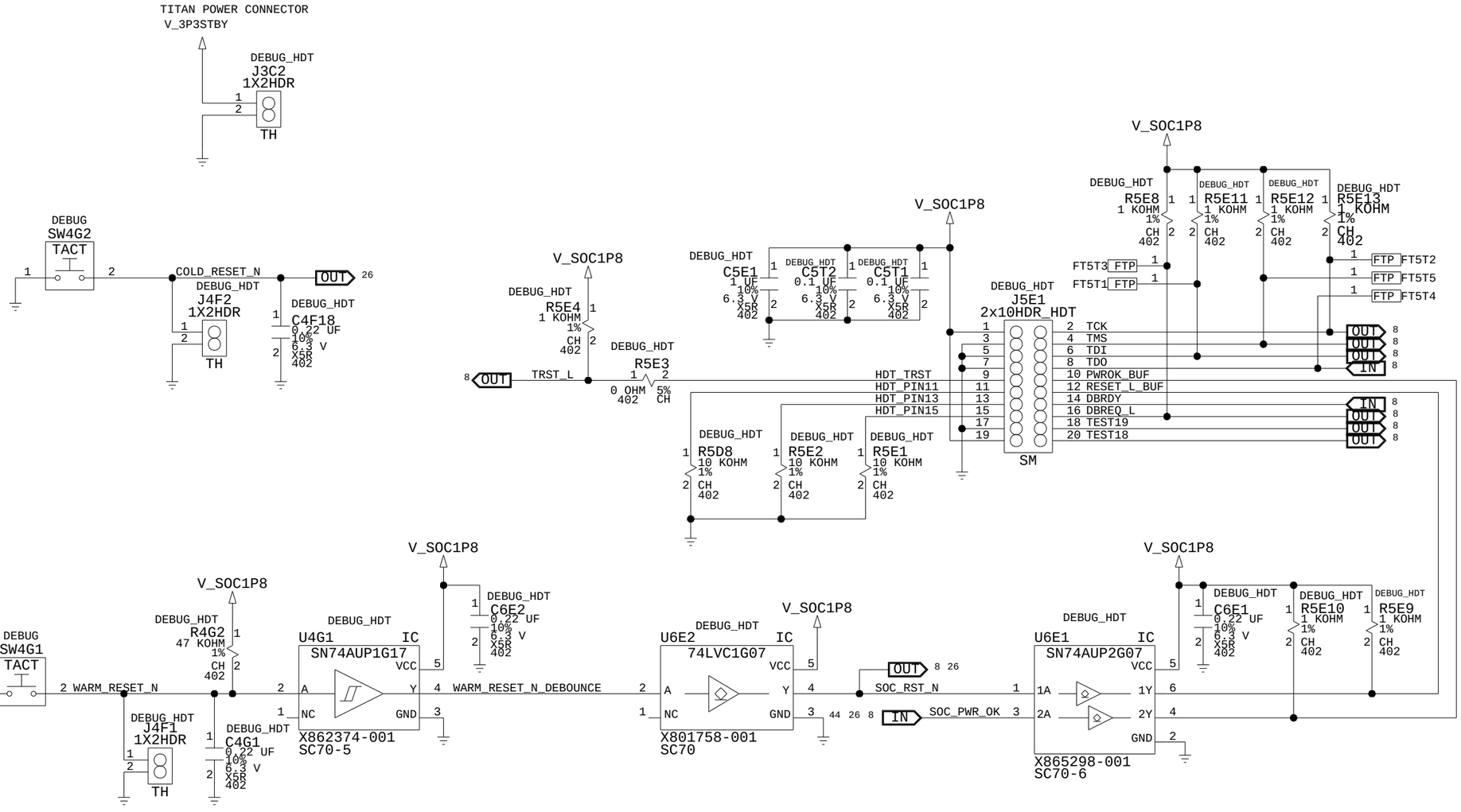




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 80/86 | 80/86 | M | 1.0 |

# CONN: HDT




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 81/86 | 81/86 | M | 1.0 |

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# DEBUG: VR HEADERS & TEST POINTS

V_CPUCORE — DEBUG TP9G2 — SM
V_GFXCORE — DEBUG TP9C2 — SM
V_NBCORE — DEBUG TP6F1 — SM
V_MEMCORE — DEBUG TP6E2 — SM
V_SOCPHY — DEBUG TP4F4 — SM
V_BURN — DEBUG TP6D1 — SM
V_SB1P8 — DEBUG TP5C1 — SM
V_1P1STBY — DEBUG TP3C1 — SM

V_VTTD — DEBUG TP9C1 — SM
V_VTTB — DEBUG TP9F1 — SM
V_3P3 — DEBUG TP5F1 — SM
V_5P0 — DEBUG TP3E3 — SM
V_5P0DUAL — DEBUG TP4B1 — SM
V_SOC1P8 — DEBUG TP5C3 — SM
V_SOCPHY — DEBUG TP5D2 — SM
V_SB1P8 — DEBUG TP5D1 — SM
V_1P8STBY — DEBUG TP3D1 — SM

V_VTTC — DEBUG TP6D2 — SM
V_VTTA — DEBUG TP6E1 — SM
V_3P3STBY — DEBUG TP4C1 — SM
V_5P0STBY — DEBUG TP4B3 — SM
V_12P0 — DEBUG TP9B1 — SM
V_SOC1P8 — DEBUG TP4F6 — SM
V_BAT — DEBUG TP4E2 — SM
V_SBCORE — DEBUG TP3D4 — SM
V_SBCORE — DEBUG TP3D3 — SM

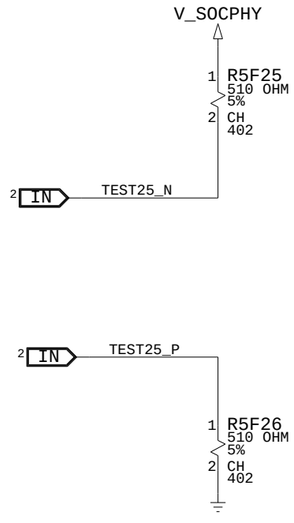
V_MEMIOCD — DEBUG TP6C1 — SM
DEBUG TP4B2 — SM
DEBUG TP9G3 — SM
DEBUG TP5B1 — SM
DEBUG TP5C2 — SM
DEBUG TP4E1 — SM

V_MEMIOAB — DEBUG TP9G1 — SM
DEBUG TP4C2 — SM
DEBUG TP5E1 — SM
DEBUG TP4D1 — SM
DEBUG TP5F2 — SM
DEBUG TP8B1 — SM

59 54 26 IN — VREG_V5P0_PWRGD — DEBUG TP3E1 — SM
59 54 26 OUT — VREG_V5P0_EN — DEBUG TP3E2 — SM
57 51 50 26 IN — VREG_PWRGPB_PWRGD — DEBUG TP4F5 — SM
57 51 50 26 OUT — VREG_PWRGPB_EN — DEBUG TP4F3 — SM
56 53 52 26 IN — VREG_PWRGPA_PWRGD — DEBUG TP4F2 — SM
56 53 52 26 OUT — VREG_PWRGPA_EN — DEBUG TP4F1 — SM
45 44 26 IN — VREG_CPUGFX_PWRGD — DEBUG TP7C1 — SM

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 83/86 | 83/86 | M | 1.0 |

# DEBUG: CONNECTORS




| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | REV |
|---|---|---|---|---|
| | Silverton_Retail | 84/86 | 84/86 | 1.0 |

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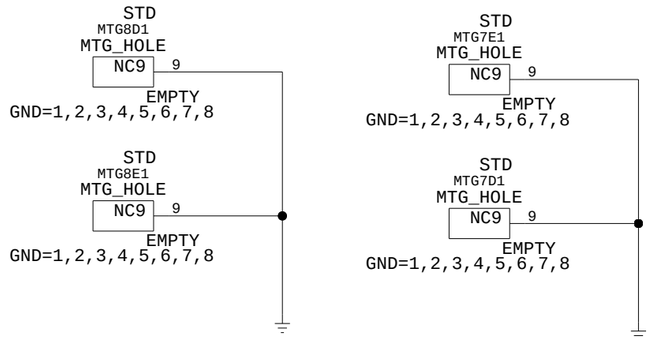
# LABELS AND MOUNTING

HEAT SINK MOUNTING HOLES




INTELLIGENT SERIAL NUMBER TARGET

LB3G1
X801181-001
LABEL

1

1375X250_TARGET

| MS_PART# | MATL | REF_DES | DESCR. | BOM PROPERTY |
|---|---|---|---|---|
| X887997-011 | FR4 | PCB1 | PCB-RIGID,RETAIL,FAB M,6L,FR4,GI | PCB_GI |
| X887998-011 | FR4 | PCB1 | PCB-RIGID,RETAIL,FAB M,6L,FR4,OSP | PCB_OSP |

| MICROSOFT CONFIDENTIAL | PROJECT NAME | PAGE | CSA PAGE | FAB | REV |
|---|---|---|---|---|---|
| | Silverton_Retail | 86/86 | 86/86 | M | 1.0 |